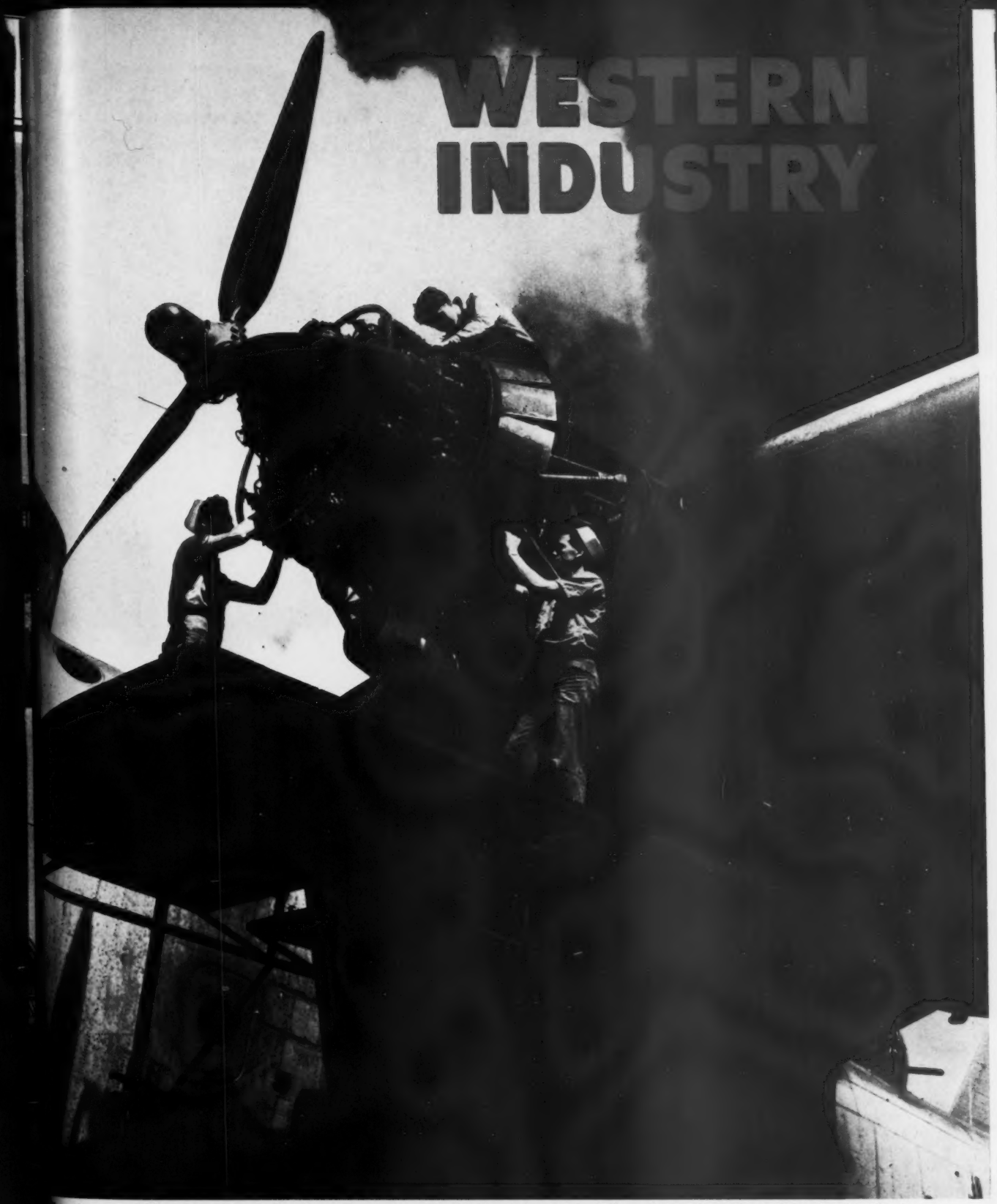
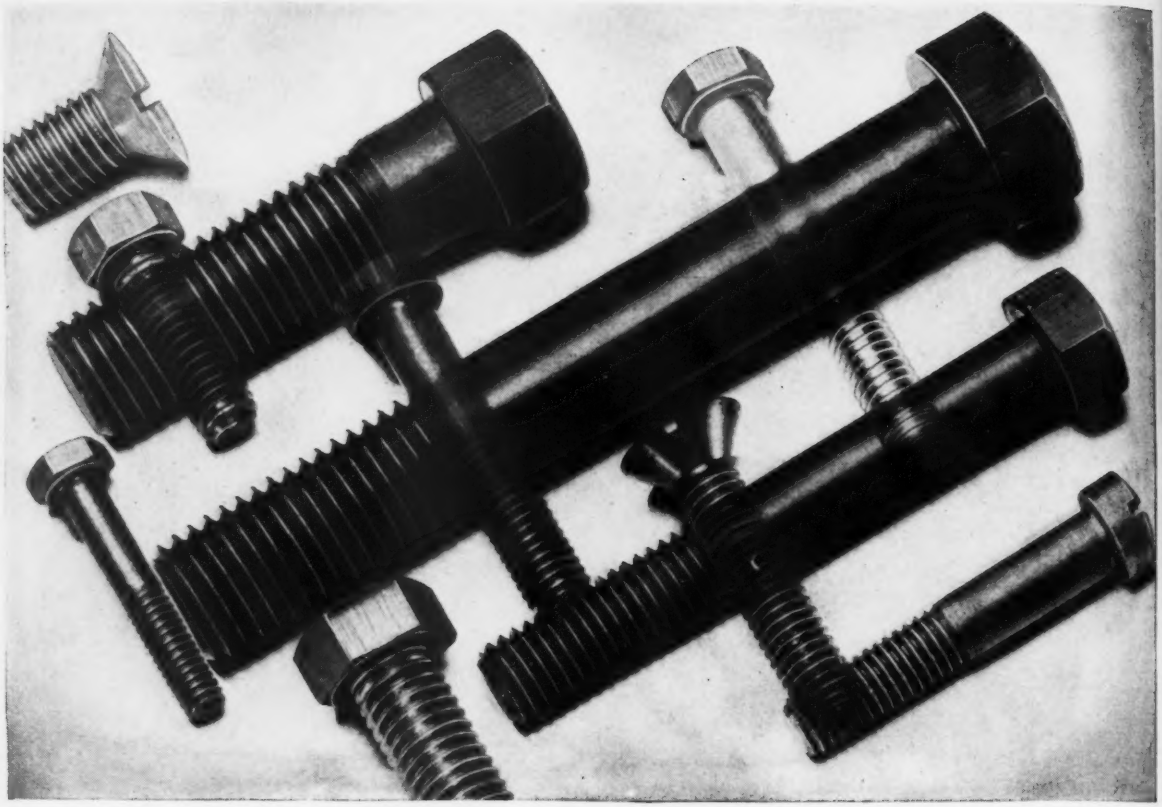
WESTERN INDUSTRY



...w Navy amphibian planes operating from the various Pacific Coast bases swell the volume of supply business for the West.

IN THIS ISSUE: Growth Through Industrial Research; Lumber Industry Has Many More Mechanization Possibilities; Bridging Chasm Between Practical Tests and Lab; Refineries Find Waste Disposal Systems Essential; Operating on "Cost Plus" Through Simplified System; Money-Saving Opportunities in Shipping; Changes in California's Postwar Economy; Industrial Groups Will Cooperate.

...y-Five Cents VOLUME XIII NUMBER 12 December, 1948



IT'S "t.f.e."

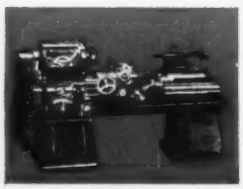
TO FASTEN QUALITY WITH QUALITY

Purpose of a fastener is to fasten. So the cheapest fastener is the one that fastens *best*, with minimum time for assembly, maximum holding power per dollar, and the ultimate contribution to the finished product's appearance.

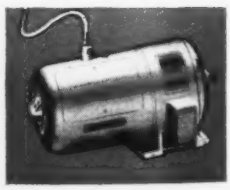
Manufacturers of machinery and equipment have learned that specifying RB&W Cap Screws saves money all along the line. RB&W's investments in spheroidizing furnaces to improve structure of high carbon and alloy steels . . . mills to draw its own wire to closest tolerances . . . atmospheric-controlled furnaces for scientific heat treatment . . . are as important as the modern production machines in contributing to *T*rue *F*astener *E*conomy.

On *any* problem involving bolts, nuts, screws, rivets or specials, RB&W engineers will help you attain *T*rue *F*astener *E*conomy.

DESIGNING FOR T.F.E. Correct use of RB&W Cap Screws often permits reduction in number and size of holes, saving time and increasing strength of assembly.



CAP SCREWS FOR SEVERE SERVICE. Uniformly high strength, maximum toughness and adherence to close tolerances equip RB&W Cap Screws for severe stress conditions.



SUPERIOR APPEARANCE. The superior finish of RB&W Cap Screws enhances the appearance of the assembly and contributes to the sales value of the final product.

t.f.e.

TRUE FASTENER ECONOMY
IS THE LOWEST TOTAL OF ALL
FASTENING COSTS

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BOLTS · NUTS · SCREWS · RIVETS

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THE COMPLETE QUALITY LINE

& ALLIED FASTENING PRODUCTS

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103 Years Making Strong the Things That Make America Strong

ASBESTOS CANNOT CARBONIZE

...USED EXCLUSIVELY IN U. S. MOTORS

INCOMBUSTIBLE NATURAL FIBRE

Asbestos is a fibrous mineral that has not changed in character for ages. It is the only known natural fibre that is absolutely incombustible. Asbestos is the protecting element in U. S. motor windings providing better heat resisting insulation.

CARBONIZING RESISTED

Life of a motor is proportional to the life of the insulation protecting the windings. If the insulation is changed chemically and physically by carbonization it ceases to be an insulation and the windings are threatened.

ASBESTOS INSULATION PROLONGS MOTOR LIFE

The advanced U. S. Motor method of using asbestos as the protecting element infinitely increases motor life and the danger of breakdown is minimized. The asbestic process is developed to give longer service without loss of motor efficiency.

GREATER HEAT CONDUCTIVITY

Asbestos is the greatest of all pliable, heat-resisting materials because it will not carbonize. The asbestos can be folded and worked into the windings, and contrary to common belief, it transmits heat away from the inside of the motor faster than ordinary elements.

EXCLUSIVE U. S. DEVELOPMENT

U. S. Motors was the first to adopt asbestos insulation, pioneering a field that required research and development in the processing of asbestos fibers to make a suitable insulation for electric motors. Asbestos Protection is another exclusive U. S. development.

ADDITIONAL PROTECTION

The impregnating compound, Asbestosite, is an additional safeguard found only in U. S. Motors. Asbestosite is fine powdered asbestos held in colloidal suspension with volatile diluents. It is hardened by baking, forming a hard insulation coating that assures long motor life.

U. S. MOTORS

See next page

Type SC—Horizontal

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WEATHERPROOF—FULLY STREAMLINED—¼ TO 500 HORSEPOWER

Here's a protected, covered motor at the price of a motor with exposed parts. The streamlined weatherproof housing of the U. S. Uniclosed Motor offers protection against dirt, chippings, etc. Its windings are asbestos-protected. The rotor is of die-cast solid aluminum, virtually indestructible. Lubriflush insures perfect lubrication. Normalized castings maintain accuracy and freedom from bearing stresses. The U. S. Uniclosed Motor is noted for its cool, quiet operation. It is available in sizes you need, in horizontal and vertical types; also with Unimount brackets to fit directly upon your machines to save space and belts. Ratings range from ¼ to 500 h.p.

Descriptive Bulletins available—Ask for copies

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SYNCROGEAR MOTORS	*for multiplied power*
VERTICLOSED MOTORS	*for deep well pumping*
UNICLOSED MOTORS	*Horizontal and Vertical*
UNIMOUNT MOTORS	*Horizontal and Vertical*
TOTALLY-ENCLOSED MOTORS	*for hazardous services*

AUTOSTART *Buffers*

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Front Cover

These new amphibians, 60,000 pounds gross takeoff weight, are jacks-of-all trades, doing patrol, reconnaissance or cargo work, servicing land planes when shore bases are not available. They can pick up men from land or water and deliver supplies to isolated bases too small to support fixed landing fields.

NEED MORE "DRIVE" IN YOUR MACHINES?

Rex Light Chabelco . . . *for moderate loads*

Rex Universal Chabelco . . . *for heavy loads at higher speeds*

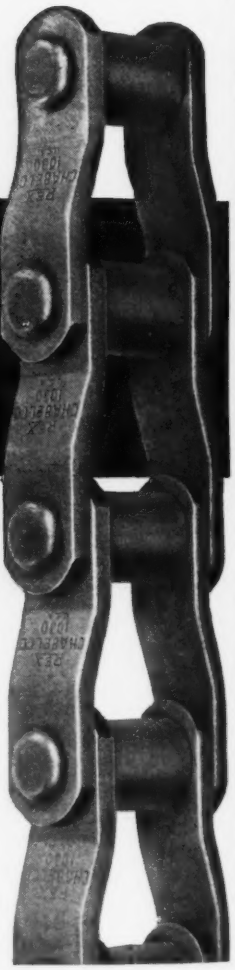
Rex 3100 Series Chabelco . . . *short pitch chain for high-speed service.*

If you want top performance from your machines . . . if you want drives that stand up under the toughest operating conditions, the Rex Chabelco Line of Chains and Sprockets is the answer.

Specifically designed for drive service on equipment where steady, uninterrupted service is a "must," these husky steel chains *deliver more H.P. per dollar* . . . assure low initial and operating costs . . . and freedom from production loss due to premature drive failure. Often a Rex Chabelco Chain, single or double strand, will handle loads that would require triple or quadruple strands in other types of chain.

Where service is exceptionally severe . . . where equipment must operate under conditions of dirt, dust and temperature extremes, a Chabelco Chain will keep going when other driving mediums would soon fail. Designed-in clearances between working parts enable it to operate efficiently under these conditions and to accommodate minor misalignments.

Many sizes of standard Rex Chabelco Chains and Sprockets are now available from stock. For all the facts on how they can help you put more "drive" in your machines at the lowest over-all cost, call your Rex Field Office or write Chain Belt Company, 1723 West Bruce Street, Milwaukee 4, Wis.



Rex Heavy Chabelco . . . *for heavy loads*

CHAIN BELT COMPANY — REX — DRIVE AND CONVEYOR CHAINS

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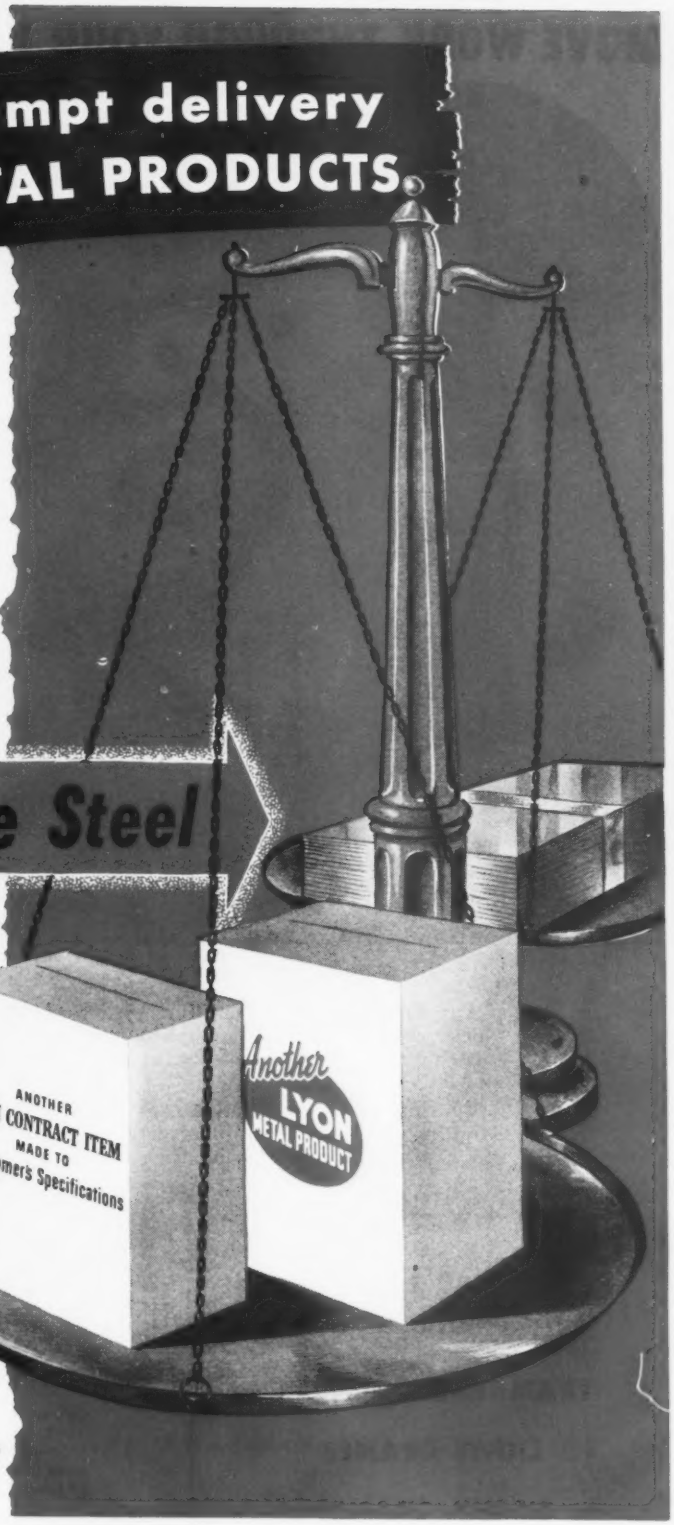

● Many LYON customers have found it possible to supply us with steel in 12 to 24 gauge sheets. In such cases, we will buy the steel from you and ship the pound-for-pound equivalent in

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• Wood Working Benches	• Hanging Cabinets	• Folding Chairs	• Work Benches	• Bar Racks	• Hopper Bins	• Desks	• Sorting Files
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....WITH *Whiting Trambeam*

An efficient materials-handling system saves so much time and labor that it quickly repays its cost. It streamlines plant operations and improves conditions for workers, reducing the frequent interruptions that cut down production time and increase costs.

Whiting can now supply *locally* your requirements for overhead materials-handling equipment—engineered to meet the needs of your particular plant. Ask a Whiting representative for recommendations.

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Two plastic wires may look as alike as two peas in a pod—but that doesn't mean they will act alike—through the years.

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That's why it pays to buy a make of plastic wire you can depend upon.

You can't go wrong by specifying Densheath*. This plastic insulation was pioneered by Anaconda *13 years ago*. This remarkable insulation is long-aging . . . won't burn . . . is impervious to acids, oils and alkalies. For quick, trouble-free installation, Densheath offers great resistance to abrasion . . . smooth, slick finish with no braid . . . easy fishing and clean stripping.

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*Reg. U. S. Pat. Off.

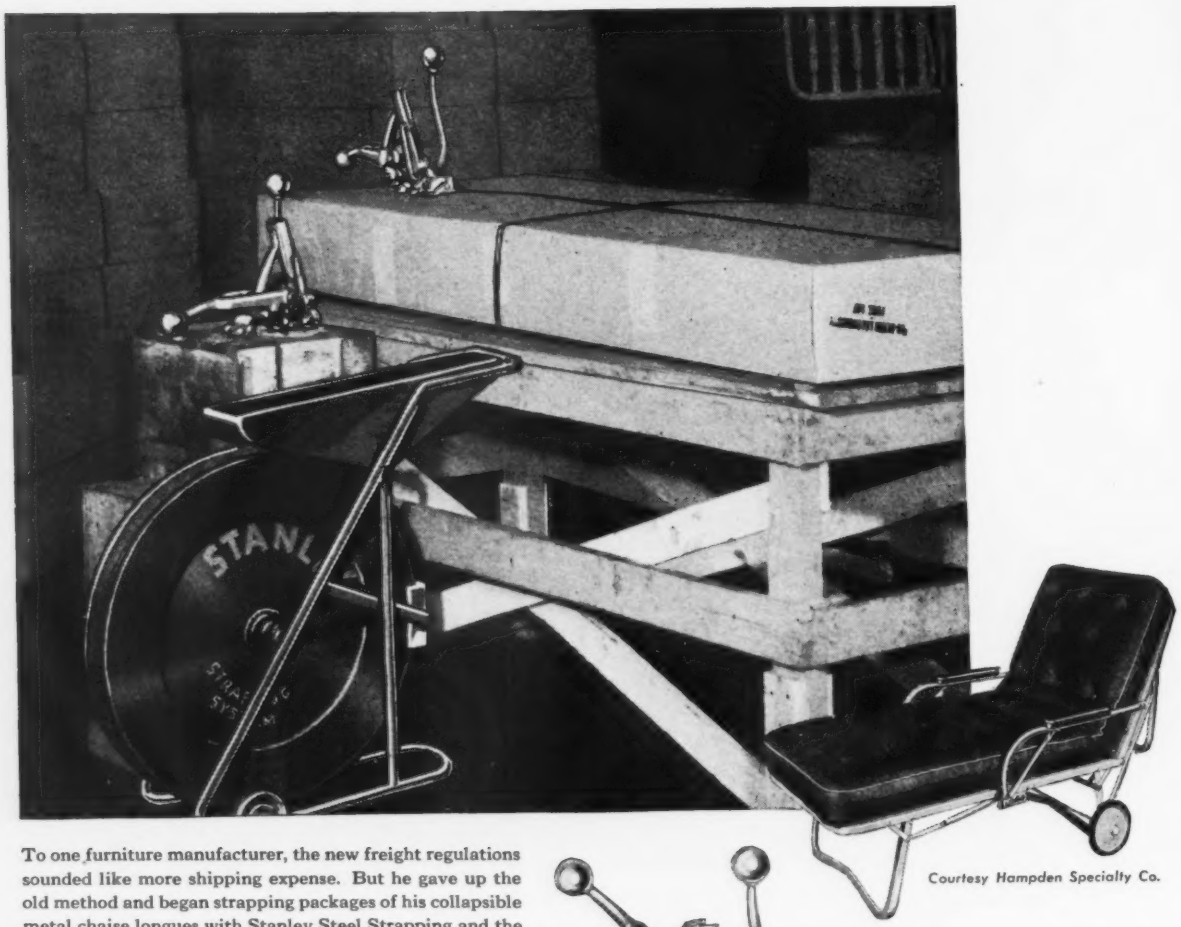
FOR PLASTIC INSULATION, MAKE ANACONDA HEADQUARTERS

ANACONDA

Anaconda **Densheath** *Thermoplastic* INSULATED WIRE AND CABLE

Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

Stanley Steel Strapping and the New Improved "ACE" Tool make new package FASTER! BETTER!



Courtesy Hampden Specialty Co.

To one furniture manufacturer, the new freight regulations sounded like more shipping expense. But he gave up the old method and began strapping packages of his collapsible metal chaise longues with Stanley Steel Strapping and the New Improved "ACE" Strapping Tool. Then he made the happy discovery . . . he was saving money.

The package made up faster, shipped better. Chaise longues arrived factory fresh . . . fewer complaints and adjustments, less lost motion.

The combination of Stanley Steel Strapping and the New Improved "ACE" speeds goods out of the shipping room, gets them there in better condition and saves man-hours, materials and shipping costs. The Stanley Steel Strapping System includes tools, reels and accessories for all applications. Write for folder. The Stanley Works, Steel Strapping Division, 234 Lake St., New Britain, Conn. *West Coast Sales Offices:* 108 W. 6th St., Los Angeles 14; 681 Market St., San Francisco 5; 618 2nd Ave., Seattle 4.

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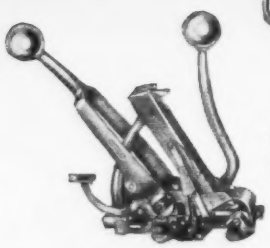

New Improved "ACE" Strapping Tool . . . four motions, five seconds from strap to seal. Positive spring feed seal magazine. The "ACE" comes in three sizes to fit all width strapping.

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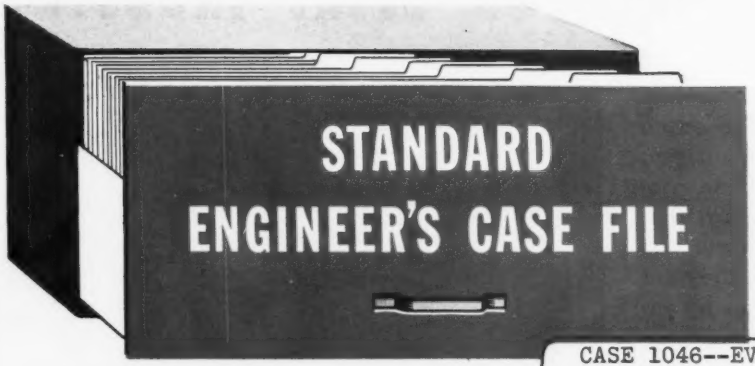
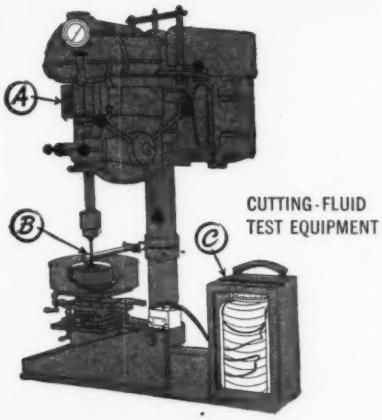
NATIONAL MATERIALS HANDLING SHOW

PHILADELPHIA--JAN.10-14,1949

BOOTH NO. 12



CASE 1046--EVALUATING CALOL CUTTING AND SOLUBLE OILS.



CUTTING-FLUID TEST EQUIPMENT

To determine machining values of Calol Cutting Fluids and help make correct recommendations, Standard's scientists developed a Drilling Torque Tester.

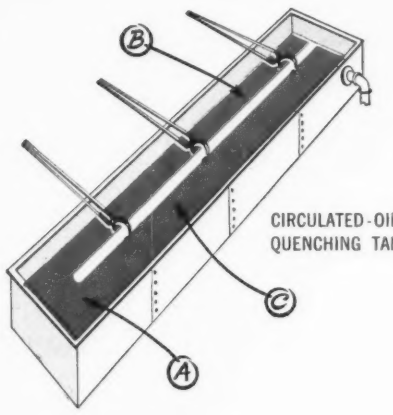
A. Modified drillpress with controlled drilling speeds and feed rate is basic unit.

B. With the Calol Cutting or Soluble Oil to be tested flowing onto a steel test plate, a series of 1-inch-deep holes is drilled into the plate with a precision-sharpened drill. Drill speed is increased 100 rpm for each hole. Test continues until drill fails.

C. Electronic device records the torque curve for each hole. A peak on a curve indicates drill failure. Oils are rated in terms of the speed at which drill failure occurs.

All Calol Cutting and Soluble Oils are given this "breakdown" test. This assures top service from each in the use for which it is recommended -- rapid cooling of tool and work, long tool life and finest possible work finish.

CASE 1049--PRODUCING UNIFORM HARDNESS WHEN HEAT-TREATING AND QUENCHING STEELS.



CIRCULATED-OIL QUENCHING TANK

When batches of Calol Quenching Oils were used for long periods, analysis of the oils at various intervals showed no sign of oxidation or sludging. Repeated tests made after many months of service proved that uniform hardness of quenched steels was still being obtained, and indicated that the abilities of these oils actually improve with use. Come in two types: Calol Alloy Quenching Oil for all alloy steels having a carbon content of less than 0.50%. Calol Quenching Oil for steels having a carbon content of more than 0.50%.

A. Contain no fatty oils to produce disagreeable odors.

B. High stability helps produce uniform work continuously ... reduces danger of brittleness, distortion and cracking.

C. Practically foam-free at efficient quenching temperatures ... may be used with sodium cyanide or salt without ill effects on oils.

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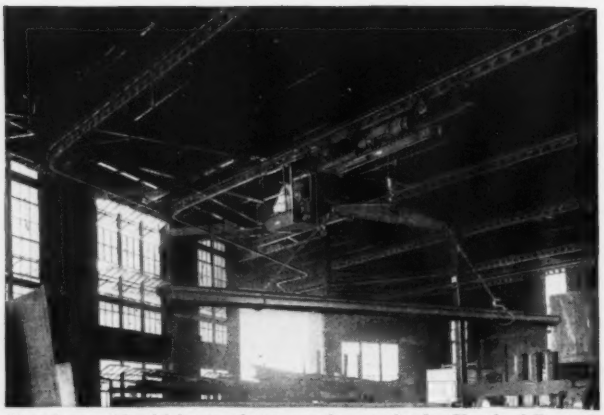
RPM CALOL

FOR EVERY NEED A **STANDARD OF CALIFORNIA** JOB-PROVED PRODUCT

MATERIALS HANDLING FOR EVERY INDUSTRY

Plants in nearly every conceivable industry are enjoying numerous advantages possible with Cleveland Tramrail. They are speeding production and lowering costs by eliminating rehandling and providing straight line production efficiency. They are reducing floor congestion and greatly increasing warehouse storage capacity. In many instances, they are eliminating need of plant expansion by installing Cleveland Tramrail.

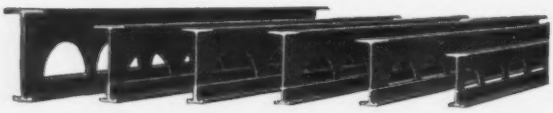


Many hours of hard labor are being saved every day by Cleveland Tramrail Systems like this. The cab-controlled motor-driven carrier handles speedily long unwieldy bar steel and pipe from cars to stock, and from stock to points of work.

STANDARD ITEMS EASILY COMBINED TO HANDLE MATERIALS OF ANY KIND

Cleveland Tramrail raised-tread long-wear rail.

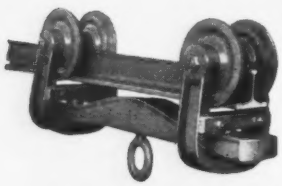
Cleveland Tramrail consists of standard items such as rail, switches, carriers, cranes, hoists, grabs, etc., which can be combined in a thousand-fold ways to serve nearly every materials handling requirement.



Cleveland Tramrail Archbeam in seven sizes for various loads and conditions.

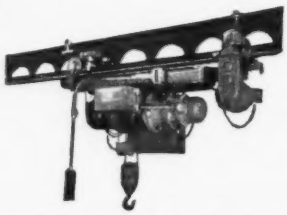
Cleveland Tramrail is facilitating materials handling and cutting costs in many bakeries. Large rack loads of bread are easily handled through oven, cooling box, etc. An overhead Tramrail system with proper switches eliminates need of usual floor equipment.

30,000 INSTALLATIONS



Hand propelled carrier built for long life and easy operation. Wheels have hardened tread and flange; bearings are double race type.

Backed by experience with 30,000 installations in industries of all types, Cleveland Tramrail representatives are in exceptionally good position to serve you. They will gladly advise, survey your plant, make layout or prepare quotation without obligation.



Motor-driven carrier with electric hoist. One of many types built by Cleveland Tramrail.

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THE CLEVELAND CRANE & ENGINEERING CO.
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CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

Patrick Henry speaking before the Second Revolutionary Convention of Virginia in 1775.

RESULTS...speak for themselves!

True, Patrick Henry's famous speech got results—men were inspired to fight for a free and independent nation . . . yes, and Bay State's Mounted Wheels and Points get results too—results that speak for themselves.

There are very definite reasons for such superiority.

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3 — Shaped on spindles — run absolutely true
4 — Ready for immediate cutting action
5 — Unique treatments are available to prevent loading on certain types of jobs
6 — Service life is longer — can be used right down to the mandrel

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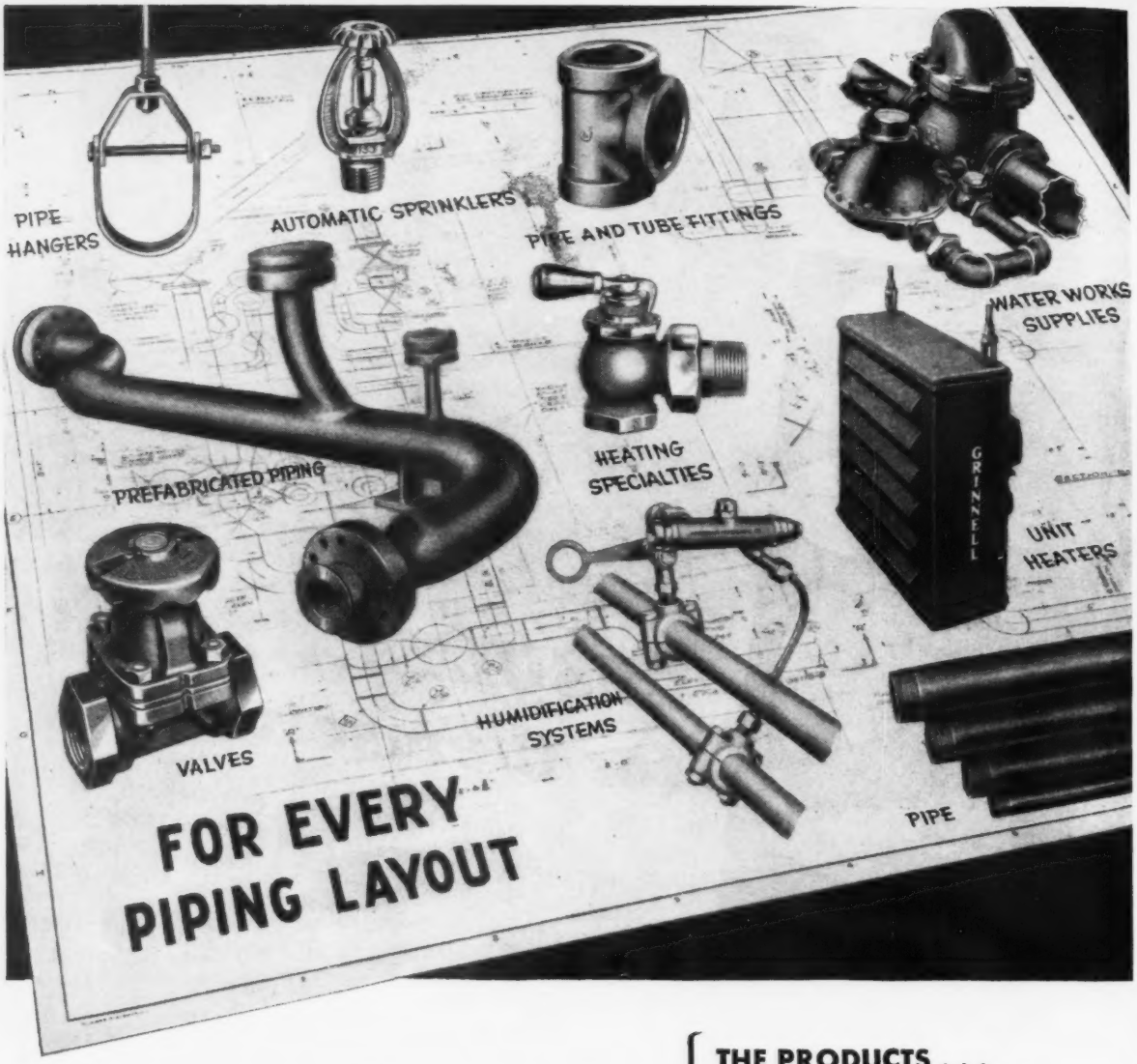

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THE FACILITIES . . .
THE EXPERIENCE

Whether your piping layout involves installing simple water and air lines, protecting buildings from fire, supplying heat or humidification or transporting steam under 1,500 lbs. pressure, Grinnell provides the products, facilities and the experience for a *complete one-stop piping service.*

Grinnell manufactures a broad line of piping products and carries a complete stock of pipe, valves, fittings and piping specialties in strategically located branch warehouses . . . supplies prefabricated piping sub-assemblies ready to install . . . can help you engineer your piping system.

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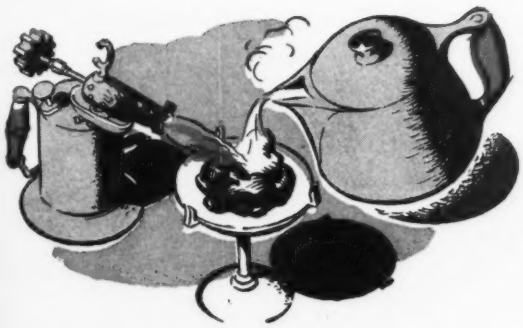
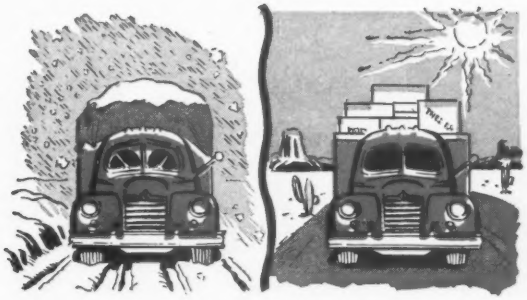
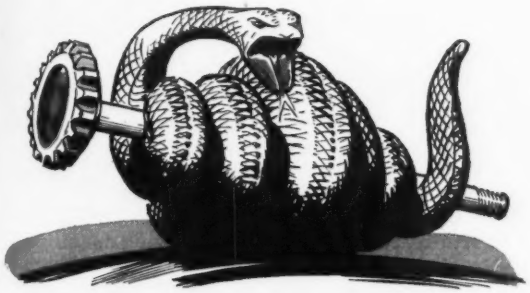


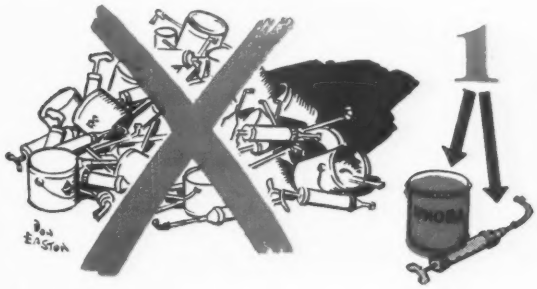
1. UNOBA is the first all-purpose grease in history that resists *both* heat and water. That's why this one grease performs the jobs that formerly required many different types, grades and brands of greases!



2. UNOBA is a barium base grease designed to withstand severe moisture and temperature extremes. Neither boiling water nor dry heat can cut its protective coating! UNOBA gives thorough lubricant protection at below-freezing temperatures to over 300° F.



3. UNOBA's unusual adhesiveness to metal gives maximum protection against rust and corrosion. It maintains excellent grease structure under severe mechanical working and does not deteriorate in storage.



4. UNOBA simplifies lubrication to such a degree that only *one gun* and *one container* need be used in most cases! Thus UNOBA saves you time, reduces equipment costs and holds stock inventory to a minimum.

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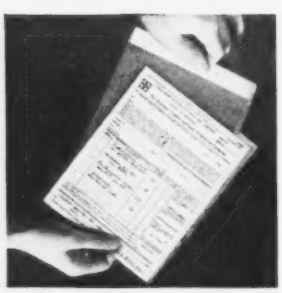

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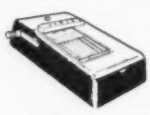

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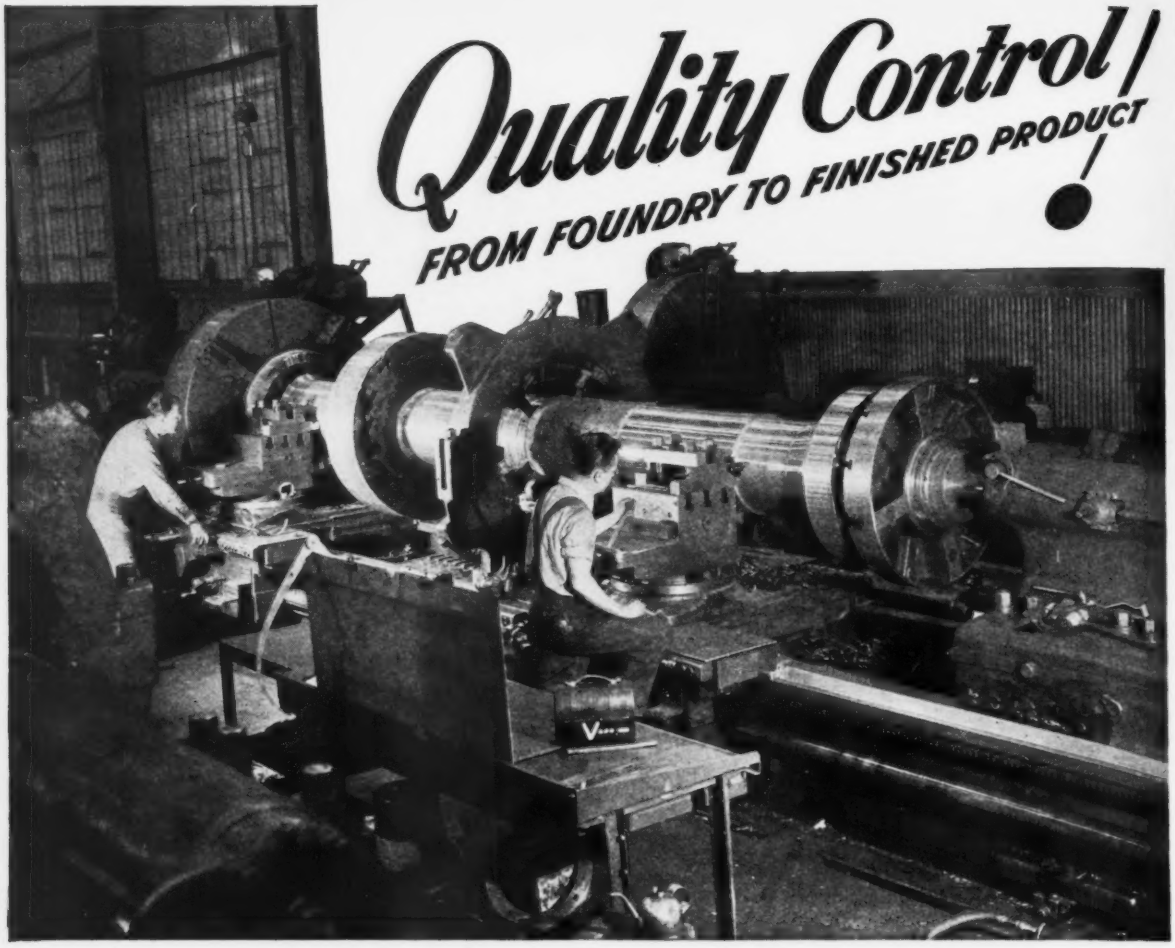

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Four Basic Wick-Feed Lubrication Systems Meet Diverse Requirements
Design Is Simple, Cost Is Low, Reliability and Long Life Assured

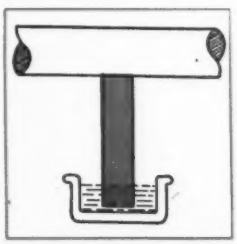
Lubrication by means of felt wicks permits oil to be fed to bearings and other moving parts, automatically and without failure or interruption. Wicks permit extremely fine control of lubricant, from many drops to a small fraction of a drop per minute. Where actual consumption of oil is low, oil-impregnated felt makes possible the use of completely enclosed parts, such as sealed bearings, and is in fact essential to them. In such applications it can be expected that lubrication will be supplied throughout the life of the part, and that no attention will be required between major overhauls.

The cost of a felt wick is low, in fact infinitesimal compared with the cost of the machine or part whose performance it protects.

TYPES OF WICK OILERS

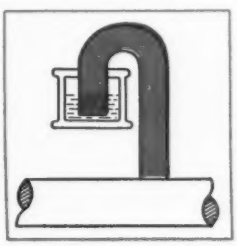
There are four types of wick lubrication systems. Choice of any given type depends upon such factors as the lubrication needs of the moving part, accessibility, available space, operating and servicing conditions, and similar matters of design and use.

1. BOTTOM WICK OILER.



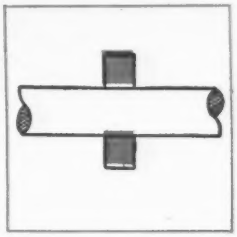
In this type, the felt wick is immersed in a reservoir of oil beneath the bearing, and through capillarity carries the oil upward to the point of lubrication. Maximum vertical wicking distance, about 6 inches. This is generally considered the most efficient system. Unused oil is returned to the reservoir, and no attention is required beyond occasional cleaning and replenishing of oil as required. An ideal system for apparatus such as motors, generators, and factory equipment.

2. SYPHON WICK OILERS.



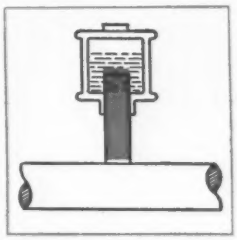
Felt wicks of this type are widely used, particularly where oil is to be delivered uniformly and at a controlled rate to a remote friction point. In addition to other methods of control, the flow of lubricant can be increased by increasing the vertical wicking distance from the reservoir to the point of lubrication, taking advantage of gravity.

3. Absorbent or pad feed oiler.



Here the lubricant is contained entirely within the felt, and is released automatically as required. This is the type often employed in sealed installations, though it may also be used in conjunction with a filler tube, the chief purpose of which is to act as a small reservoir. The oil absorption or storage capacity of felt is high. For example, SAE F-10 felt, recommended for pad oiling, will store oil of any viscosity to the extent of approximately 450 per cent of its own weight.

4. TOP FEED OILER.



The reservoir is above the lubrication point, and oil is supplied through a felt wick inserted in an outlet in the bottom. In this case, the wick acts as an obstruction to control the flow of oil. Frequently the wick is mechanically constricted to effect further control while taking advantage of storage capacity between constriction and delivery point. This insures uniform lubrication and provides a surplus reserve of oil in the event of an empty reservoir.

There are four types of SAE felts recommended for wick feed lubricating systems. Complete information is contained in American Felt Company Data Sheet No. 6, "Wicks and Lubrication." This eight-page Data Sheet presents complete technical data, including formulae, charts, graphs, tables and a listing of standard wick felts from which engineers can calculate wick performance and arrive at a design and specification that will meet the requirements of a given application. Write on your letterhead for your copy.

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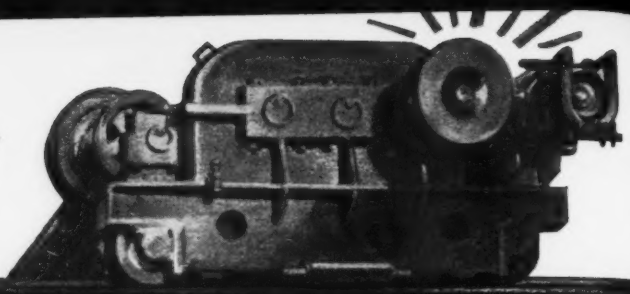

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In Our Mail Box

Sales Training

Editor, Western Industry:

I was very much interested in the article by Mr. C. W. Port, manager, Sales Training, General Petroleum Corporation, Los Angeles—and in my opinion, he has hit the nail on the head. One of the greatest assets any salesman can have is a thorough and complete knowledge of the products he is selling. Frequently a production man turns into an excellent salesman for that very reason—because he knows the product.

E. B. WOODWORTH
General Sales Manager
Hawaiian Pineapple Company, Ltd.
San Francisco, Calif.

West Getting Together

Editor, Western Industry:

I am entirely in accord with this idea of the West getting together to work out solutions to some of its problems.

I came to the State of Washington in 1938 and one of the things that has been disturbing during that period of time is the lack of coordination between the west and the east side of the state, and between the various states of the Pacific Coast area. I think the time is certainly here, and particularly with the possibility of a change in the political climate, when we should get together and work out the major problems of the Pacific West.

The Pacific Northwest is going to be short of power until 1953, and possibly until 1956, unless some Federal power policy is adopted. I believe this is harmful to the entire Pacific Coast area, as many of the things that are being done in the Northwest have been planned for later accomplishment in the California area. I believe that all business and industrial interests should be working out some coordinated plan for the entire West.

K. M. ROBINSON, President
The Washington Water Power Co.
Spokane, Washington.

Western States Council

Editor, Western Industry:

After all, I am pretty much of a freshman in this chamber of commerce business, but I have always had the greatest respect for the Western States Council and I can't help but feel that some steps which would make that organization the leader and somewhat the over-all organization for the group to get together and work out the solutions of some of our Western problems might be the best way of working it out.

I do know that we have plenty of problems and that it will take organization and complete cooperation from the West in order to bring about any solutions and I may be over-estimating the ability and strength of the Western States Council. However, it seems that they demonstrated their strength pretty well in '45 on the steel matter and possibly a similar meeting to promote the development of the West might result in the ball being handed to them.

NAT S. ROGERS, President
Seattle Chamber of Commerce

The Power Picture

Editor, Western Industry:

I heartily agree with you that the West will be tied to the apron-strings of a Federal budget as long as all major hydro-electric projects are undertaken only by the government and, furthermore, that all appropriations for such regional developments are necessarily criticized and put under fire by all the other sections of the country.

(Continued on page 23)

EDITORIAL COMMENT

Assuming Our Own Responsibility

WHAT an impact on the West is in the making, through the government programs for development and control of water! And how little the West has to say, or seems to care, whether this impact is intelligently directed!

While it took the Reclamation Bureau 45 years, from 1902 to 1947, to spend a billion dollars in development of water resources, now Congress has appropriated another billion dollars to be spent in one year alone, with some 50 billions in all either appropriated or projected for the future. This is called to our attention by Dr. J. R. Mahoney, director of the Bureau of Economics and Business Research of the University of Utah, who also has been acting as Senior Analyst on natural resources and public domain for the Library of Congress, under the new set-up by which the Library becomes the research agency for Congress. In addition, he has served in a similar capacity for the Hoover governmental reorganization project.

Another pertinent fact, that the government's intensified activity in military preparation is bound to entail further hydro-electric development in the West, is brought to our notice by Dr. N. H. Engle, director of the Bureau of Business Research of the University of Washington, who is one of the advisors to the Capehart committee investigating the steel basing situation.

Direction of all this development rests in the hands of governmental planners in Washington, subject to such influence or pressure as may be brought to bear by local interests scattered through the West. But is the development in accordance with the West's greatest needs? Have these governmental planners really deeply studied trends, causes and effects? And most important of all, has the West itself devoted real active effort to the solution of its economic problems, so that it can develop constructive programs through its own initiative, instead of merely approving Washington plans or objecting to them?

With all this governmental spending in prospect, is not the West in danger of becoming a governmental toy, or experiment ground, far beyond anything we have yet experienced? That day is indeed imminent, unless we develop our own economic pattern, not a draughting-board affair, but a pattern based on accurate and comprehensive knowledge. To this the force of logic would compel all interested parties to agree.

Where to Draw the Line

IN AN editorial in our March, 1948, issue, we quoted Lowell Mason, Federal Trade Commission member, as saying that laws should be given an entirely new classification, in accordance with their degree of acceptance by the community as moral standards. He likened existing laws to a target, with the bull's-eye representing those laws whose authority comes from a process of universal assent rather than force, and the surrounding circles those statutes which in lessening degree represent morality, until finally the point is reached where it is no longer possible for the average person to rely on his own conscience in understanding whether acts are wrongful of themselves or merely prohibited by statute.

Into just which circle Mr. Mason believes the basing point decision of the U. S. Supreme Court should fall, it is a bit difficult to figure. He says that the multiple basing point decision which does not take into account every point of production is out as a matter of law, and that anyone who uses freight absorption, zone prices or relies on a quantity discount rate established by merely trade custom, operates under the shadow of illegality and is taking a calculated risk. But where does freight absorption fall when considered on a basis of morality?

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Gould uses the X-Ray Diffraction Unit for storage battery research. It measures distances between atoms— analyzing and aiding in the perfection of active materials.

The X-Ray Diffraction Unit actually measures the distances between atoms. It gives fast, accurate qualitative analyses of complicated metallic compounds, gives Gould complete control over the purity of active materials and is revealing new relationships between molecular activity and battery characteristics. That's why Gould batteries give predictable performance and longer life . . . why every Gould battery is packed with the most active power-producing material available today.

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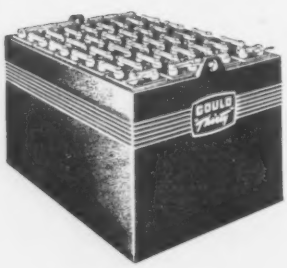

The Gould "Thirty"—America's Finest Industrial Truck Battery!

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Always Use Gould Automobile and Truck Batteries

MAIL *(Cont'd from page 21)*

Moreover, as long as there is a probability that the government will continue to make the necessary investments for major hydro-electric projects, there is little likelihood that private venture capital will be available for that purpose. This would probably be equally true even though, as is now the case, the government project was not directly and indirectly subsidized as a result of low or no interest charges, few if any taxes, and a major allocation of project costs to the supposed benefits from flood control, navigation, reclamation, etc., etc.

This background must be taken into consideration in answering the question you raise as to whether hydro-electric development on a large scale can also be handled by private enterprise. Even so, I think the answer to the bare question would be in the affirmative were it not for further additional factors which are involved. Furthermore, even if a suitable and promising hydro-electric site could be found which was not yet preempted by the government, the interpretations of the Federal Power Act made by the Federal Power Commission and generally confirmed by our courts would unquestionably require a federal license which provides that the government shall have the right at the end of not more than 50 years to take over the project on payment to the owner of a sum of money which in effect can be determined by the Federal Power Commission.

There has been a great deal of argument and discussion as to how such sum of money would be determined. This undoubtedly could be onerous in the case where the income of the operator of the licensed development was determined by the sale of power under public utility rate schedules, but in that case at least there would be a bona fide measuring stick as to income and profits from the operations.

However, in case the licensed project was operated for industrial purposes and used by the licensee himself, the Federal Power Commission states it would not recognize the rates charged for the power from the power development to the industrial use and, as you can see, this results in an impossible situation.

Therefore, I think the practical answer to your question as to whether any major hydro-electric developments can be expected to be undertaken by private enterprise is in the negative if you have in mind the development by an industrial organization for its own use. I would, however, hope that this situation could be cleared up and it seems to me that it must be cleared up.

OBSERVER

Larger Cotton Quotas Sought for California

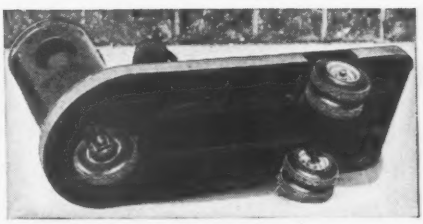
Congressional action to set a new base for California cotton acreage quotas is being sought by the council on cotton of the Bakersfield Chamber of Commerce to avoid peril to the Western cotton industry.

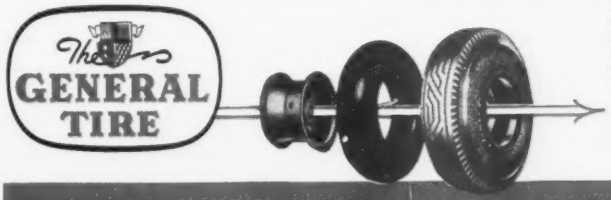
Robert Davidson, council vice-chairman, said reductions to 1938 levels will place Kern County's $40,000,000 cotton industry in jeopardy. The state was 10th in 1938 with 415,000 bales, he said, while this year it produced 950,000 bales. The 1948 crop will represent $200,000,000.

Growers' investments are estimated at $32,000,000 while the industry has provided many additional millions for 135 cotton gins, seven cotton compresses, seven cotton seed mills and processing plants.

KWICK-TOTER *moves loads faster!*

For swift and complete maneuverability, in plenty of space or limited space, the all-new KWICK-TOTER fills a definite need. It will turn completely around in its own length; runs from 2½ to 10 mph; with dual wheels will carry 2-3000 pounds. Load area 23½ sq. ft. Overall weight 990 lbs. Length 108 in. Width 42 in. Kut-Kwick Tool Corp., Brunswick, Georgia.





The most modern of the new materials handling equipment is being supplied with General Industrial Pneumatic tires. Available in complete assemblies of wheel, tube and tire, or tire alone.

THE GENERAL TIRE & RUBBER CO.
Akron, Ohio

A New Year's message to our friends

As a difficult year draws to a close we take this opportunity to express appreciation to our many customers for their business and for their patient understanding.

The unbelievable demand for steel created an almost insurmountable problem for the industry.

We tried to meet this situation to the best of our ability. New warehouses increased our facilities in 1948 and further improvements are planned for 1949. We are now at your service from coast to coast, determined to serve you better.

Meanwhile, let us extend our sincere best wishes for a happy holiday season and a successful New Year.

UNITED STATES STEEL SUPPLY COMPANY

BALTIMORE · BOSTON · CHICAGO · CLEVELAND · LOS ANGELES · MILWAUKEE
NEWARK · PITTSBURGH · ST. LOUIS · SAN FRANCISCO · TWIN CITY (St. Paul)

THE WESTERN OUTLOOK..*News...Statistics...* 1

Employment gains shown by most Western states over year ago; Pacific Coast carloading forecasts for fourth quarter show smaller volume for agricultural crops are more than offset by pactically all mining, industrial and manufacturing classifications; electrical energy gains show West's growth; 1949 beet sugar outlook not encouraging at present.

EMPLOYMENT report estimates from eight of the Western states for September show non-agricultural employment levels higher than for the same month a year ago and in some cases all-time peaks were reached. Montana reflected the same growth in reports for August. No reports were available from Colorado or Wyoming.

Normal seasonal layoffs in certain industries following the September peaks were anticipated by some government bureaus in keeping with seasonal trends.

Total employment in all California manufacturing industries reached a record peacetime total of 799,600 wage and salary workers in September just before seasonal layoffs began to occur as anticipated for the late fall months. The figure for September, 1947, was 744,800.

Employment in the manufacturing of non-durable goods in California was at an all-time high of 395,300 in September, 1948, up 33,300 from the 362,000 of September, 1947. Workers in durable goods plants increased to 404,300 in September — the highest level since the war and up 21,500 above the September, 1947, figure.

CONSUMERS' PRICE INDEX

From Bureau of Labor Statistics
100=5 yr. avg. 1935-39

	Los Angeles	San Francisco	Portland	Seattle	Denver
April 15	169.3	....	175.8	....	168.5
May 15	169.1	....	....	174.3	....
June 15	168.8	174.2	....	....	....
July 15	170.3	....	180.3	....	172.5
Aug. 15	171.0	....	....	176.2	....
Sept. 15	171.0	177.1	....	....	....

More workers were employed in September in the apparel, printing-publishing, lumber, and stone - clay - glass industries than at any other time in California history, according to Paul Scharrenberg, Director of Industrial Relations for California, and M. I. Gershenson, chief of the Division of Labor Statistics and Research, San Francisco.

Total non-agricultural employment in Washington increased 10,400 between mid-August and mid-September to reach a new postwar high of 703,150, according to estimates released jointly by John D. Davis, commissioner for the State of Washington Employment Security Department, and Max D. Kossoris, regional director of the U. S. Bureau of Labor Statistics, San Francisco.

Industrial and trade concerns in Oregon were employing about 17,000 more persons for the period to September over that of a year ago, according to the October letter of the State Unemployment Compensation Commission, of which T. Morris Dunne is chairman.

Utah estimated manufacturing employment at 32,700 for September, slightly higher than the 32,554 for September, 1947. Mining employment was estimated at 13,900, compared with 13,423 of September, 1947.

(Continued on page 27)

MANUFACTURING EMPLOYMENT

Estimated Number of Employees in Non-Agricultural Establishments—Source: U. S. Bureau of Labor Statistics

	MONTANA		IDAHO		WYOMING		COLORADO		NEW MEXICO		ARIZONA		UTAH		NEVADA		TOTAL MTN.	
	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948
April	16,600	17,100	.....	.....	.....	.....	.....	.....	....	....	14,500	15,900	23,510	22,300	3,700	3,300	.....	.....
May	17,100	17,000	.....	.....	.....	.....	.....	.....	9,100	9,300	14,200	16,200	24,110	24,400	3,300	3,300	.....	.....
June	17,800	17,700	.....	.....	.....	.....	.....	.....	9,100	10,000	14,800	16,500	25,020	26,300	3,300	3,400	.....	.....
July	....	18,200	.....	.....	.....	....	.....	.....	9,300	10,400	14,000	15,700	29,810	29,400	3,400	3,400	.....	.....
August	18,200	18,000	.....	.....	.....	....	.....	.....	9,300	10,500	13,400	15,700	29,620	28,100	3,400	3,400	.....	.....
September	.....	.....	.....	.....	.....	....	.....	.....	9,100	10,350	13,800	14,400	30,820	32,700	3,400	3,500	.....	.....

	WASHINGTON		OREGON		CALIFORNIA		TOTAL PACIFIC	
	1947	1948	1947	1948	1947	1948	1947	1948
April	170,400	175,300	.....	126,800	698,600	695,800	.....	997,900
May	174,900	152,350	117,100	130,300	693,000	696,300	985,000	978,950
June	179,300	163,400	.....	.....	689,300	712,900	.....	.....
July	176,500	179,900	.....	146,200	741,300	704,000	.....	1,030,100
August	185,000	183,150	.....	154,300	760,200	770,900	.....	1,108,350
September	186,650	190,450	.....	151,800	744,800	799,600	.....	1,141,850

INSURED UNEMPLOYMENT

(Under all programs: figures in thousands. From Social Security Board)

Week ending	Ariz.	Colo.	Idaho	Mont.	Nev.	N. Mex.	Utah	Wyo.	Total Mtn.	Calif.	Ore.	Wash.	Total Pacific
May 1	5.5	6.2	3.7	4.0	1.9	3.5	4.3	.8	29.9	220.6	16.5	31.5	268.6
June 5	4.4	4.2	1.5	2.0	1.4	2.4	2.3	.4	18.6	193.7	11.7	25.7	231.1
July 3	4.2	4.0	.8	1.2	1.3	2.3	2.2	.3	16.3	172.4	9.7	17.7	199.8
July 31	4.5	4.1	1.0	1.0	1.2	2.3	2.5	.4	17.0	173.6	9.4	19.5	202.5
August 28	4.8	3.5	.9	.9	1.1	2.0	2.9	.3	16.4	164.0	7.7	19.9	191.6
October 2	4.3	2.2	.5	.7	1.2	1.2	2.1	.2	12.4	148.6	7.8	20.3	176.7

INDEX NUMBERS OF WHOLESALE PRICES BY GROUPS OF COMMODITIES AND BY MONTHS

Bureau of Labor Statistics, Washington 25, D.C.
(1926 = 100)

Year and Month 1948 Yr. Avg.	Farm Products	Foods	Hides and Leather Products	Textile Products	Fuel and Lighting	Metals and Metal Products	Building Materials	Chemicals and Allied Products	House Furnishing Goods	Miscellaneous	ALL COMMODITIES
April	186.7	176.7	186.1	150.3	131.6	157.2	195.0	136.2	142.3	121.8	162.8
May	189.1	177.4	187.5	150.2	132.6	157.1	196.4	134.7	142.6	121.5	163.9
June	196.0	181.4	186.8	149.6	133.1	158.7	196.8	135.7	143.4	121.4	166.2
July	194.9	188.3	189.2	148.9	135.7	162.8	199.4	134.4	144.5	120.3	168.6
August	191.1	189.5	188.4	148.5	136.6	170.8	202.8	132.0	145.4	119.6	169.4
September	189.1	186.3	187.5	147.8	136.7	171.9	203.9	133.3	146.1	119.9	168.5

In the past 18 months

¼ OF A MILLION WESTERN EMPLOYEES

have joined the *Big Swing* to *Cal-Western GROUP INSURANCE!*

WHY THIS MAJOR TREND TOWARD CAL-WESTERN GROUP INSURANCE?

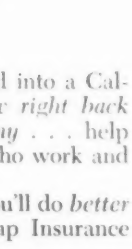
First, California-Western States Life, a *Western* company, *knows* the West, and knows the needs of western industry.

Second, with its home office in California, and a network of group offices in principal western cities, Cal-Western is in a position to give *better, more efficient service* . . . and *does*.

Third, premium dollars paid into a Cal-Western Group plan *flow right back into the Western economy* . . . help build prosperity for all who work and live in the West!

First, last, and *always* . . . you'll do *better* with a Cal-Western Group Insurance plan. Investigate *today!*

Ask Your Insurance Broker About Cal-Western "Tailor-Made" Group Insurance Plans . . .



California-Western States Life Insurance Company

OR CONTACT YOUR NEAREST CAL-WESTERN GROUP OFFICE:

Complete Group Lines: Life Insurance, Accident & Health, Accidental Death & Dismemberment, Hospital, Surgical, Medical Care, Diagnostic X-Ray and Laboratory Examination, Additional Accident Expense.

- **SACRAMENTO, CALIF.** 400 Calif. State Life Bldg. Phone: 2-3661
- **SAN FRANCISCO, CALIF.** 111 Sutter St. Phone Garfield 1-4524
- **LOS ANGELES, CALIF.** 520 W. 7th St. Phone: Madison 6-1351
- **SAN DIEGO, CALIF.** 631 Orpheum Theatre Bldg. Phone: Franklin 0137
- **STOCKTON, CALIF.** 246 No. Sutter St. Phone: 8-8974
- **FRESNO, CALIF.** 205 Helm Bldg. Phone 3-7244
- **PORTLAND, OREGON** 1001 Cascade Bldg. Phone: Atwater 1313
- **HOUSTON, TEXAS** 522 City Nat'l Bank Bldg. Phone: Charter 41779
- **DALLAS, TEXAS** 2002 Tower Petroleum Bldg. Phone: Riverside 3033
- **LONG BEACH, CALIF.** 535 Ocean Center Bldg Phone 6-6424

(Continued from page 25)

New Mexico's non-agricultural industries employed 129,700 persons in September, an increase of 1,510 from August and 10,200 above September, 1947, according to the report of Benjamin D. Luchini, chairman-executive of the Employment Security Department.

In Montana, non-agricultural employment was at an all-time peak of 145,000 in August, with construction and metal mining scoring impressive gains since August, 1947, according to the Montana Unemployment Compensation Commission, of which Barclay Craighead is chairman.

Commerce and Banking

Fourth quarter carloading forecasts of Pacific Coast Transportation Advisory Board show smaller volume than last year in a number of agricultural crops more than offset by practically all the mining, industrial and manufacturing classifications. Aggregate forecast all commodities 556,000 cars, an increase of 50,000 cars or about 10% over 1947. Largest increase in group of five construction materials, aggregate gain of 33,000 cars; minerals, manufactures and miscellaneous, 14,500 more than a year ago; merchandise LCL 4,200 cars up.

Pacific Northwest Advisory Board forecast: overall decrease of 3,290 cars, or 1.14%. Lumber up 4,080 cars, or 3.8%; grain down 5,901 cars, 35.4%; flour, mill and other feed products, up 99 cars or 1%; coal and coke decrease 7.5% because heavy stocks of Canadian coal and coke imported before maritime strike began; gravel, sand and stone up 9%; paper and paper board products, 248 cars increase, 2.2%; wood pulp 393 cars up or 15.7%; canned foods even with last year; frozen foods decrease 282 cars, 25%, because of smaller pack; furniture down 25.7% account of very noticeable buyer resistance. Central Western district, which includes Colorado and parts of Wyoming, Utah and Idaho, 5.1% increase.

Security-First National Bank of Los Angeles business index shows net advance of less than 2% since April, 1948. Wells Fargo Bank & Union Trust Co., San Francisco, California business index for August 235.7 of 1935-39 average, compared with 224.9 in August, 1947. New business undertakings first half of 1948 for California 6% increase over 1947, while comparable period of 1947 up 12% over 1946.

Electric Energy

The West's growth in population, commerce and industry in the year ending Sept. 30, 1948, is significantly revealed in the following report on peak demand by L. E. Wing, regional engi-

(Continued on page 29)

ELECTRIC ENERGY

(Production for Public Use—In thousands of kilowatt hours. Source: Federal Power Commission)

	Mountain		Pacific Northwest		California		Total Pacific	
	1947	1948	1947	1948	1947	1948	1947	1948
March	1,041,287	1,200,824	1,454,305	1,628,060	1,531,005	1,572,699	2,985,310	3,200,759
April	1,185,575	1,402,860	1,456,204	1,722,614	1,662,024	1,503,141	3,118,228	3,225,755
May	1,254,204	1,432,407	1,450,716	1,661,764	1,738,511	1,632,572	3,189,227	3,294,336
June	1,263,666	1,432,925	1,363,534	1,458,586	1,759,504	1,747,255	3,123,038	3,205,841
July*	1,312,747	1,555,236	1,382,030	1,661,175	1,911,232	1,916,914	3,293,262	3,610,389
August	1,296,208	1,500,992	1,445,637	1,722,841	1,890,554	2,061,250	3,336,191	3,784,091

*Revised.

NATURAL GAS

(CALIFORNIA)

(Compiled by Roy M. Bauer, gas supply supervisor, Southern California Gas Company)

	—Number of Consumers—		*Utilization (in thousands of cubic feet)			
1947 Avg.	Domestic and Commercial	Industrial	Domestic and Commerc'l Sales	Industrial Sales	Electric Generation	Net Receipts from Producers
Apr.-June	2,264,203	5,615	12,978,115	10,812,647	2,609,401	27,819,226
July-Aug.-Sept.	2,286,105	5,416	9,011,093	13,555,587	4,472,142	30,407,522
Oct.-Nov.-Dec.	2,341,438	5,421	17,765,709	11,991,303	4,393,060	38,665,845
1948						
January	2,380,640	5,423	28,285,107	8,573,499	5,017,424	43,791,288
February	2,394,316	5,431	28,567,848	7,220,292	4,492,387	41,786,308
March	2,406,643	5,437	27,126,578	9,223,591	3,727,824	42,412,284

*Utilization figures do not include company use, storage, and unaccounted for.

FREIGHT

Cars of revenue freight, railroad carriers in 11 Western states.

(Compiled from Assn. of Am. R.R. weekly reports)

	Carloadings		Received from Eastern Connections	
	1947	1948	1947	1948
February	509,715	463,924	288,172	271,370
*March†	656,920	600,715	350,527	313,850
*May	522,144	688,311	279,392	356,101
*June	714,982	718,618	348,892	358,714
July	755,983	560,656	331,613	271,766
August	728,578	622,139	381,068	332,008
September	825,668	505,545	404,771	273,876

*5-week period. †Incl. 4 weeks of following month.

BANK LOANS

Industrial, commercial and agricultural
(In millions of dollars)

From weekly reporting member banks of Fed. Res. System in 7 western cities: L.A., S.F., Portland, Seattle, Tacoma, Spokane, and Salt Lake.

(Average of Wednesday reports)

1948	
April	1,992
May	1,983
June	2,033
July	2,045
August*	2,108
September	2,160

*Includes 3 days of preceding month.

BANK DEPOSITS

(In millions of dollars—adjusted)

Daily average month, all member banks in 12th Federal Res. Dist. Demand deposits excluding U. S. Gov't deposits, cash items in process of collection, and interbank deposits.

1948	Net Demand Deposits	Time Deposits
April	8,676	6,036
May	8,720	6,012
June	8,777	6,019
July	8,735	6,026
August	8,834	6,009
September	8,950	6,004

WHOLESALERS' SALES

In thousands of dollars. Percentage changes are from corresponding month of preceding year. From Bureau of the Census.

MOUNTAIN

	Automotive Supplies	Change	Electrical Goods	Change	Furn. and house furn.	Change	Groc. and foods exc. farm prod.	Change	General Hardware	Change
Feb.	676	— 1	2,808	+ 28	...	....	1,568	....	....	....
March	631	— 6	3,390	+ 34	395	+20	2,055	....	....	....
April	789	0	3,657	+ 29	...	....	....	....	2,511	+26
May	284	+ 1	3,412	+ 12	...	....	....	....	2,313	+ 8
June	685	+17	3,832	+ 25	336	+28	....	....	2,356	+19
July	811	+ 7	3,731	+ 22	...	....	....	....	2,565	+26
August	752	+10	3,583	+ 36	242	—10	....	....	....	....

PACIFIC

											Industrial Supplies	Change	Lumber & bldg. mat.	Change	Mch. equip. and supplies excl. elec.	Change	Metals	Change
Feb.	2,401	—19	11,542	+ 22	341	+ 20	3,289	....	7,277	— 2	...	....	1,712	+48	774	—22	751	+17
March	2,601	—16	13,550	+ 41	285	+ 42	2,889	....	8,626	+10	595	+ 7	1,685	+28	857	—17	...	....
April	1,949	—15	12,546	+ 21	281	+ 55	5,215	....	7,414	+ 4	428	—16	1,906	+25	...	....	...	....
May	2,687	— 4	12,587	+ 15	281	+ 6	6,984	....	8,096	+ 3	536	+ 6	1,616	+42	597	—17	...	....
June	2,756	+ 2	12,557	+ 11	239	+ 26	5,129	....	8,040	+ 8	419	+ 7	1,578	+53	604	+ 6	...	....
July	2,686	— 5	12,965	+ 14	1,435	+ 18	8,395	....	7,916	+ 8	522	+ 2	1,015	+37	902	+ 8	...	....
August	2,181	+ 6	13,740	+ 23	303	+ 13	10,377	....	6,043	+11	2,324	+21	1,721	+38	....	....	....	....

*Full-line wholesalers.

INDEX OF DEPARTMENT STORE SALES

Index numbers, 1935-39 daily average=100 with seasonal adjustment. Compiled by Federal Reserve Bank.

	Total 12th Fed. Res. Dist.		Southern California		Northern California		Portland		Western Washington		Eastern Washington and northern Idaho		Utah and southern Idaho		Phoenix	
	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948
March	319	331	339	374	281	283	300	318	336	336	329	341	366	331	432	448
April	320	353	350	400	282	303	292	335	334	349	324	348	355	386	421	482
May	329*	356	363*	404	292	313	315	339	338	343	329	338	340	365	421	484
June	334	372	365	422	295	328	328	350	340	363	337	390	343	357	420*	459
July	331	365	363	411	291	318	329	382	341	344	313	382	350	334	404	464
August	353	383	401	451	307	326	326	380	359	340	350	385	361	352	440	487

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April	1,949	—15	12,546	+ 21	281	+ 55	5,215	....	7,414	+ 4	428	—16	1,906	+25	...	....	...	....
May	2,687	— 4	12,587	+ 15	281	+ 6	6,984	....	8,096	+ 3	536	+ 6	1,616	+42	597	—17	...	....
June	2,756	+ 2	12,557	+ 11	239	+ 26	5,129	....	8,040	+ 8	419	+ 7	1,578	+53	604	+ 6	...	....
July	2,686	— 5	12,965	+ 14	1,435	+ 18	8,395	....	7,016	+ 8	522	+ 2	1,015	+37	902	+ 8	...	....
August	2,181	+ 6	13,740	+ 23	303	+ 13	10,377	....	6,043	+41	2,324	+24	1,721	+38	...	....	...	....

*Full-line wholesalers.

INDEX OF DEPARTMENT STORE SALES

Index numbers, 1935-39 daily average=100 with seasonal adjustment. Compiled by Federal Reserve Bank.

	Total 12th Fed. Res. Dist.		Southern California		Northern California		Portland		Western Washington		Eastern Washington and northern Idaho		Utah and southern Idaho		Phoenix	
	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948
March	319	331	339	374	281	283	300	318	336	336	329	341	366	331	432	448
April	320	353	350	400	282	303	292	335	334	349	324	348	355	386	421	482
May	329*	356	363*	404	292	313	315	339	338	343	329	338	340	365	421	484
June	334	372	365	422	295	328	328	350	340	363	337	390	343	357	420*	459
July	331	365	363	411	291	318	329	382	341	344	313	382	350	334	404	464
August	353	383	401	454	307	326	326	380	359	340	350	385	361	352	440	487

*Revised

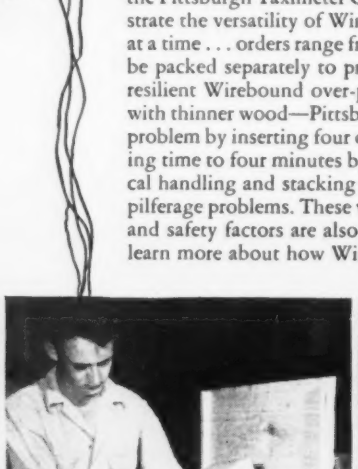
PITTSBURGH TAXIMETER CO.
reports:

WIREBOUND OVER-PACKS

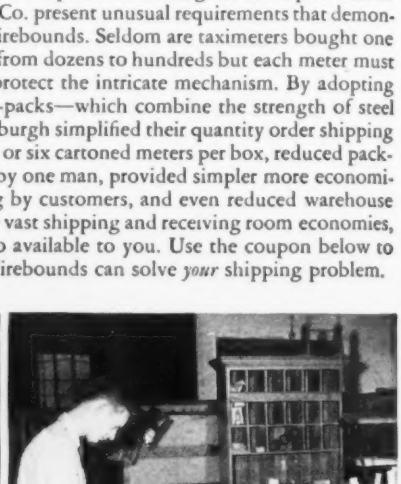
afford greater convenience and economy

Although most industrial users employ Wirebound Boxes or Crates as the sole shipping containers the precision-built, glass-faced products of the Pittsburgh Taximeter Co. present unusual requirements that demonstrate the versatility of Wirebounds. Seldom are taximeters bought one at a time . . . orders range from dozens to hundreds but each meter must be packed separately to protect the intricate mechanism. By adopting resilient Wirebound over-packs—which combine the strength of steel with thinner wood—Pittsburgh simplified their quantity order shipping problem by inserting four or six cartoned meters per box, reduced packing time to four minutes by one man, provided simpler more economical handling and stacking by customers, and even reduced warehouse pilferage problems. These vast shipping and receiving room economies, and safety factors are also available to you. Use the coupon below to learn more about how Wirebounds can solve *your* shipping problem.

Wirebound Over-Packs are shipped flat . . . eighty percent assembled. One man assembles box in less than three minutes.

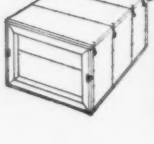


Individually cartoned taximeters are packed into Wirebounds to provide maximum protection to sensitive mechanism and glass faces.



Five twist closures complete packing. The strength of the Wirebound permits stacking for shipping and receiving room convenience.

SIXTY WIREBOUND PLANTS THROUGHOUT THE UNITED STATES



Wirebound
BOXES & CRATES

MAIL THIS COUPON

WIREBOUND BOX MFG. ASS'N.
Room 606, 503 Market Street, San Francisco 5, Calif.

☐ SEND COMPLETE LITERATURE ☐ SEND A SALES ENGINEER

NAME _____ POSITION _____

FIRM NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

PRODUCT _____

(Continued from page 27)

neer for the Federal Power Commission at San Francisco:

	Sept. 30, 1947	Sept. 30, 1948
Montana-Idaho, Utah-Oregon-Washington (interconnected companies)	3,023,000 kw.	3,518,000 kw.
Northern California	1,880,000	2,090,000
Southern California	2,150,000	2,320,000
Arizona	228,000	300,000

This review and forecast of conditions for 1948, 1949 and 1950 gives the following indications of supply:

Montana, possibility of a surplus by 1950; 15,000 kw. added to supply in 1948.

Utah-Idaho, shortage of 3,000 kw. in 1949 but supply equal to demand in 1950; 1949 outlook not serious, however, because power can be purchased by the utilities from Kennecott Copper Company; 46,300 kw. added supply in 1948.

Washington-Oregon: No actual shortage, but reserve non-existent in 1948 and dangerously low in 1949-1950. Under adverse conditions of water flow or equipment break-downs, shortages may develop. Montana and Utah can help out to the extent of 85,000 kw. Area should be able to get by if loads do not increase too rapidly. 212,000 kw. added to supply in 1948.

Northern California: Assuming 1948 as an average year, area will get over the December peak providing 60,000 kw. can be imported from southern California, which is well assured, since as high as 120,000 kw. already have been supplied. If next spring is dry, it will be a close call. 474,000 kw. added to supply in 1948.

Southern California: Surplus of power until 1955. 300,000 kw. added to supply in 1948.

Arizona: Shortage until 1950. 24,000 kw. added to supply in 1948.

Coal

Bituminous coal production in the intermountain area is on the rise after an exceptionally mild seasonal slump.

Steel

Bright spots in the picture: Columbia's strip mill at Pittsburg opens, will supply approximately 50 per cent of the strip for cans used in the West. Pacific States Steel Corporation's three open hearths at Niles opening next March will add 200,000 tons capacity. Fontana blast furnace back in operation, and Eagle Mountain mine ore begins coming in at the rate of about 30,000 tons a month (Vulcan mine still has stockpile to be used up, after which Eagle Mountain shipments will go up to 60,000 tons), seventh open hearth at Fontana comes in at end of December, increasing capacity to 1,000,000 tons annual ingot capacity. Bethlehem's bar, rod and wire mill at Los Angeles opens in December. Rainier Steel Corporation's two electric steel furnaces at Tacoma producing ingots to be shipped to an automobile body maker at Detroit.

Dark spots: Maritime strike ties up many thousands of tons of steel on ships in Pacific Coast ports which cannot be unloaded. Kaiser ends shipwrecking operations at Richmond, Calif., thus decreasing the scrap supply by 10,000 to 15,000 tons a month, and other shipwrecking operations nearing a close. Current voluntary allocation programs will end in February, probably will be succeeded by more drastic arrangements.

Total purchased scrap requirements for both steel and foundry industries on the West Coast for 1949 estimated by H. W. Christenson, Columbia's director of purchasing, at 2,394,000 net tons, or three times prewar volume.

Non-ferrous Metals

Non-ferrous metal production, particularly copper, will register a decline for October because of the strike of haulage employees of Kennecott Copper Corp.'s Utah division. The shutdown cuts off approximately 30 per cent of the domestic copper production. Deep mines of the intermountain area are operating at a normal level but most of them are hampered by a shortage of competent miners.

Aluminum

Air Force demands for aluminum continuing to increase, resulting in a virtual internal allocation system within the industry. Air Force tells the three primary producers what is needed, and other customers are served to best of the supplier's ability.

Oil

The nation's tight petroleum supply situation is gradually easing. Part of the improvement reflects a step-up in world oil production, which is running about a million barrels per day above last year's production — thanks largely to major developments in the Middle East. Part of it is due to expanding refinery capacity, and to the extension of pipelines to get better distribution of fuels and conserve natural gas formerly wasted.

Last year, for instance, 6,500 miles of long distance oil and gas pipelines were completed in the United States, with another 5,800 miles currently under construction. Over the next two or three years — or just as soon as the pipe shortage permits — work will be started on 19,000 more miles of natural gas lines and 6,000 miles of pipelines for crude oil and oil products. In other world areas, only 240 miles of line actually were completed last year, but 4,500 miles are under construction and 7,500 miles more will start before long.

Oil men have been watching closely the mid-Continent area since Phillips Petroleum, wishing to attract more petroleum for its refineries, raised the price it offers for crude oil by 35c a barrel. At this writing, no general move to follow suit has occurred and the national price level may not be affected as was at first expected. With Western refineries still getting enough crude, the balance between eastern demand and total production remains rather stable. Industry men may feel, too, that a general advance in prices would be politically unwise because of criticism of the industry which followed earlier rises.

The Pacific Northwest soon will get $4,000,000 worth of new facilities, the largest single project being a $600,000 installation of storage capacity and pumping equipment at Shell's Harbor Island terminal in Seattle.

San Diego is to draw Texas gas from the recently completed pipeline to the West Coast, if the California Public Utilities Commission grants permission to build a proposed $5,000,000, 95-mile pipeline. The line will more than double the present maximum daily supply in the southernmost portion of the state.

Inroads on U. S. oil supply by the growing conversion to oil burning heating of homes may be reduced through an ingenious patented device which reportedly cuts fuel consumption about 25 per cent. Shell Development Company is offering it, royalty-free, to oil burner manufacturers, in the interests of oil conservation.

Discovery of oil at two locations in eastern and northeastern Utah has given the state two previously uncharted producing formations. The

(Continued on page 31)

IRON AND STEEL

Western Area of the United States

From American Iron and Steel Institute (in net tons)

	Pigiron Output	Percent of Capacity	Steel Output	Percent of Capacity
April	133,030	62.1	310,108	74.5
May	187,501	84.5	398,905	92.9
June	202,796	94.6	397,414	95.5
July	196,608	89.0	410,244	95.7
August	163,319	73.8	374,342	87.1
September	168,534	78.8	360,252	86.8

Alloy Steel

	Output	Carbon Ingots, Hot Topped*
April	4,806	4,255
May	7,173	9,341
June	6,948	3,672
July	5,445	6,638
August	4,848	6,383
September	3,553	6,119

*Included in total steel.

BITUMINOUS COAL AND LIGNITE

(In thousands of tons. From Bureau of Mines)

	(Colo.-N. Mexico)		(Wyoming		(Utah)		(Montana)		(Wash.-Alaska)	
	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948
March	768	419	717	341	753	321	286	281	143	129
April	431	370	482	378	514	245	196	200	108	104
May	485	563	557	519	653	701	242	215	97	140
June	520	505	596	477	581	560	150	198	107	137
July	298	391	345	346	408	502	182	228	71	95
August	490	536	518	480	523	534	255	231	103	119

PETROLEUM

(California, Oregon, Washington, Arizona, Nevada)

(From Bureau of Mines)

	CRUDE PRODUCTION (Barrels, daily avg.)	TOTAL DELIVERIES (Thousands of barrels daily)							
		GASOLINE		GAS OIL & DIESEL		HEAVY FUEL OIL		ALL PRODUCTS	
	1948	1947	1948	1947	1948	1947	1948	1947	1948
March	29,138	304	334	117	170	390	390	932	1,036
April	28,300	336	357	125	159	385	357	988	1,000
May	29,335	332	384	85	123	357	328	912	970
June	28,466	385	401	90	117	362	330	978	995
July	29,350	335	380	88	94	360	321	935	951
August	29,445	370	394	100	102	362	333	985	991

COPPER

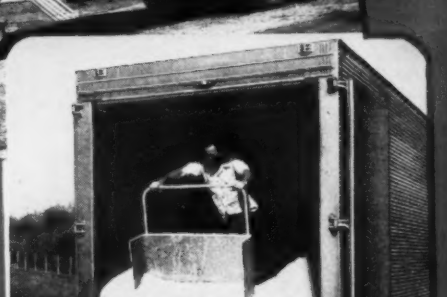
(Short tons. From U. S. Bureau of Mines)

	ARIZONA		UTAH		MONTANA		NEW MEXICO		NEVADA		TOTAL WEST'N STATES	
	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948
March	32,000	31,325	24,250	23,075	5,500	5,640	4,840	5,896	4,100	3,100	71,112	69,857
April*	30,200	31,625	23,500	23,400	5,200	5,370	5,471	6,094	4,050	3,285	68,853	70,655
May*	31,000	30,815	25,000	24,120	4,800	5,270	5,368	6,149	4,600	3,520	71,180	70,585
June	30,000	31,750	26,000	23,406	4,760	4,900	5,400	6,927	3,000	3,410	69,160	70,379
July*	32,000	30,150	23,500	22,800	4,600	4,495	5,400	5,872	4,040	3,150	70,012	67,477
August	29,870	30,150	23,620	23,975	4,160	4,380	5,930	5,821	4,430	4,630	68,735	69,786

*Corrected.

These STAINLESS STEEL VANS "Earn their Salt" HAULING IT

Stainless Steel defies the elements and saves trailer owners money. Get full particulars at your nearest Fruehauf Trailer Factory Branch.



EVERY carrier knows the corrosive effects of salt on ordinary automotive equipment. Here we propose to tell you about the *total lack* of corrosive effects on *extraordinary* equipment — the Fruehauf Stainless Steel Vans, owned and operated by the Lindsay Ripe Olive Company, Lindsay, California, when hauling wet salt—18 cubic yards or 20 tons of it, each load.

States Roy C. Lowe, traffic manager for Lindsay Ripe Olive Co., ***"Hauling bulk salt presented a major equipment problem and was the cause of very careful planning of the proper kind of equipment to use. After investigating numerous kinds and types of trucking equipment the decision was made to purchase two 35-foot Fruehauf Stainless Steel Vans.***

"We think the Stainless Steel Trailers are the best money can buy. They are working out wonderfully well for our purpose."

Ever since Fruehauf Stainless Steel Vans have been produced, we have been telling you stainless steel resists corrosion due to salt — salt, as a solid, in the air, in the fog, dirt or wherever it exists. The experience of this Trailer operator is proof conclusive of the truth we have told you many times.

Why hesitate longer? If you want Trailers that won't corrode or rust, that don't have to be painted for weather protection, that will outlast Trailers built of other metals, that are light, durable, easier and less costly to maintain, then buy Stainless Steel Trailers. They are exclusively a Fruehauf product and have the famous gravity tandem axles—the most modern vehicle suspension yet devised. As Mr. Lowe says, they ARE the best money can buy.

World's Largest Builders of Truck-Trailers

FRUEHAUF TRAILER COMPANY

SALES AND SERVICE — LOS ANGELES • SAN FRANCISCO • SACRAMENTO • PORTLAND • SEATTLE • FRESNO SAN DIEGO • PHOENIX • SALT LAKE CITY • EL PASO • SPOKANE • BILLINGS • ALBUQUERQUE • DENVER

Western Manufacturing Plant — Los Angeles

"ENGINEERED TRANSPORTATION" Fruehauf Trailers

Hear Harrison Wood, Interpreter of World Events, Every Sunday Afternoon over ABC. Consult Your Local Paper!

(Continued from page 29)

newest discovery was made by Standard Oil of California. Nearly, a three-company joint operation is shortly to explore 60,000 acres of government land.

Texas may figure still more importantly in the future, in the opinion of E. F. Bullard, president of Stanolind Oil & Gas Company, who told a meeting that some time in the foreseeable future, that state will boost its proven oil reserves to equal the present proven reserves of the entire U. S. Biggest undeveloped reservoir, h said, lies off the Texas coast, but legal and political tangles are blocking exploitation.

Canning and Packing

California's pack of canned tomatoes and tomato products expected to run between 23,000,000 and 24,000,000 cases, down about 7,000,000 cases from 1947.

Cling Peach Advisory Board announces California 1948 cling peach pack as 14,864,521 cases, about 400,000 cases below last year. Details as follows:

	No. 2½ Cases 1948 Pack as Reported	No. 2½ Cases 1947 Pack	No. 2½ Cases 1946 Pack
Regular Peach Pack	14,864,521	15,308,838	17,285,040
Fruit Cocktail	9,803,177	9,324,453	7,751,629
Fruits for Salad	962,724	530,719	296,089
Mixed Fruits	73,758	244,726	744,504
Spiced Peaches	139,122	265,105	160,389
	25,843,302	25,673,841	26,237,651

Net tonnage delivered to canneries 490,936 tons; in 1947, 498,589; in 1946, 533,840. Market reported tightening up on peaches.

California apricot stocks on hand Oct. 1 3,681,634 cases, of which about 56 per cent unsold. Sweet cherries, 72,700 cases on hand, only 18,614 cases unsold. Asparagus, 619,883 cases on hand, only 134,667 of this unsold.

Northwest Canners Ass'n preliminary pack report:

	1947	1948
Apricots	141,437 cases	66,386 cases
Sweet cherries	244,063 "	525,130 "
Red raspberries	29,620 "	70,570 "
Boysenberries	119,969 "	246,893 "
Loganberries	35,684 "	60,752 "
Youngberries	10,112 "	19,978 "
Prunes	26,170 tons	17,100 tons

Sugar

Domestic beet sugar production, most of which comes from the West, apparently is due for a drop next year because the price outlook on beets is too unattractive to encourage farmers to plant heavily. Earlier in the year it had appeared as though acreage allotments might be necessary in 1949 in order to hold down domestic production, but all that seems to be out the window. Processors will be contracting for beets in California in December, and their policy will give a further indication of the 1949 outlook. Acreage contracts in the mountain states are not made before April. Government hearings were held on Nov. 15 to gain information for setting the domestic and imported quotas of sugar, and announcements are expected late in December. The beet situation is due partly to world supply, which is now above the prewar average. European crops have been good, and the continent will not need as much imported sugar as heretofore. The American domestic beet yield this year was poor, both in quality and quantity.

Lumber

Sawmills were badly hit in October by the waterfront strike and a serious freight car shortage. A score of Douglas fir mills in the coastal area were either completely closed or reduced to part-time operation. Coos Bay, Siuslaw Harbor, Newport Bay and Grays Harbor mills were hardest hit, with some Columbia River mills reporting curtailment of production because of inability to ship.

Southern Oregon mills on the Southern Pacific system were short of needed freight cars, and some mills on branch lines were accumulating heavy mill stocks due to shortage of cars. Mills were complaining, too, that they were getting cattle cars and other unsuitable rolling stock for lumber shipping.

Flour

Market in early November remained in same condition as had prevailed for several months. Bakers buying hand-to-mouth, maritime strike preventing exports.

Pulp and Paper

Stocks of pulpwood at beginning of October were upwards of 900,000 cords, adequate to carry mills through winter at high production rates. Production of wood pulp run up to October about 8 per cent ahead of 1947.

Aircraft

Labor shortages are becoming acute in certain highly skilled categories of aircraft manufacturing. Tool designers, master layout men, mill operators, template makers and plaster pattern makers are at a premium.

Nevertheless the total employment among the West Coast's largest airplane makers has grown but little. Eleven plants recently were employing 82,956 persons, only 1818 more than last January 1. Yet orders on hand increased during this time by nearly $500,000,000, total backlog recently reaching a figure of approximately $1,500,000,000. Ninety per cent of this amount is for military planes, of which 19 models are on order, in addition to six civilian types being made.

Shortages of materials, parts, and equipment have eased somewhat but this improvement is believed only temporary, since production still is mostly in the tooling-up stage. First deliveries of recent defense orders under the "70-group" plan will not be made until after the first of the year.

Meanwhile the Air Force has announced that U. S. military aircraft — including some of the best postwar models — will be offered for sale to other American republics for purposes of hemisphere defense. Purchasing countries must agree that the planes will be used for military purposes and not be resold. Planes include the F-84 Republic Thunderjet, F-80 Lockheed Shooting Star, North-American Twin Mustang, F-82, and the troop-carrying C-82 Fairchild Packet.

Another milestone in the air progress was passed when the Army Air Forces decided to replace a complete F-80 jet fighter group with a fleet of North American F-86's, said to be the "world's fastest tactical plane." The sleek, swept-back-wing jet craft is believed to enable pilots to execute supersonic dives after enemy planes without fear of disintegrating under the buffeting of "compressibility" shock waves.

Other advanced designs just removed from wraps include two Northrop creations: the XF-89, a high-speed plane resembling a scor-

(Continued on page 33)

LUMBER

(In thousands of board feet)

From West Coast Lumbermen's Association (Douglas Fir, Sitka Spruce, Port Orford Cedar, West Coast Hemlock, Western Red Cedar):

Year through September	1946	1947	1948
Production	5,567,856	6,511,819	6,457,251

From Western Pine Association figures (Idaho White Pine, Ponderosa, Sugar Pine and associated species):

Year through September	1947	1948
Production	2,268,006	2,369,465

From California Redwood Ass'n figures (includes redwoods and whitewoods):

Year through September	1948
Production	348,279

SOFT PLYWOOD

From Bureau of the Census

(In thousands of square feet)

	1947	1948
February	129,622	156,285
March	139,670	185,716
April	147,008	164,862
May	142,409	150,717
June	140,147	150,187
July	107,588	122,386

PULPWOOD

(Pacific Northwest)

(Cords of 128 cu. ft., roughwood basis. Source: Bureau of Census)

	Receipts	Consumption
March	232,880	299,217
April	197,668	276,231
May	170,456	286,221
June	253,075	242,906
July	378,355	275,293
August	426,462	297,414

STRUCTURAL CLAY PRODUCTS

	UNGLAZED BRICK (in thousands of standard brick)		UNGLAZED STRUCTURAL TILE (short tons)		VITRIFIED CLAY SEWER PIPE (short tons)	
	Mountain	Pacific	Mountain	Pacific	Mountain	Pacific
March	7,229	16,491	2,291	3,088	2,172	15,004
April	8,927	19,008	2,258	2,344	2,458	13,997
May	9,988	22,340	2,595	2,767	2,400	14,565
June	10,504	33,017	4,046	3,119	2,520	15,675
July	11,405	31,389	3,389	2,832	2,369	15,022
August	11,474	31,178	2,232	2,374	2,576	15,022

CEMENT

(In thousands of bbls.; from U. S. Bureau of Mines)

	—California—		Oregon - Wash.		Colo.-Wyom. Mont. Utah - Idaho	
	1947	1948	1947	1948	1947	1948
Feb.	1,600	1,880	325	354	184	193
March	1,896	2,049	517	545	313	314
April	1,924	2,105	561	619	409	531
May	1,858	2,003	561	621	493	492
June	1,948	2,087	522	609	492	450
July	1,902	2,128	552	726	487	497

WHEAT FLOUR

(In thousands of sacks; from Bureau of the Census)

	Ore.-Wash.	Montana	Utah	Colorado	California	Total
January	1,480	275	264	486	363	2,868
February	1,250	275	254	360	269	2,408
March	1,288	296	309	501	293	2,687
April	1,496	293	290	471	339	2,889
May	1,535	280	237	454	285	2,791
June	1,427	295	317	481	366	2,886
July	1,664	344	289	424	379	3,100

CONFECTIONERY AND COMPETITIVE CHOCOLATE PRODUCTS

(From Bureau of Census)

(In thousands of dollars)

	COLO. - IDAHO - UTAH		— WASH. - OREGON —		—— CALIFORNIA ——	
Month	Sales	Per Cent Change from 1947 For Year to Date	Sales	Per Cent Change from 1947 For Year to Date	Sales	Per Cent Change from 1947 For Year to Date
August	359	—16	398	—28	1,982	+2

Typical parts made from round or flat wire

It combines tensile strength and conductivity to a unique degree... is unusually malleable... is resistant to stress corrosion and offers excellent resistance to creep at elevated temperatures.

CHASE patented PHOSNIC® BRONZE

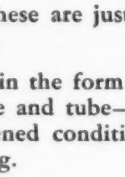
HERE'S a radically different type of copper alloy that you'll want to investigate—PHOSNIC BRONZE, made *only* by Chase.

PHOSNIC BRONZE is exceptionally malleable, permitting severe cold heading even after hard drawing to attain high strength. In this condition its resistance to stress corrosion is outstanding. Special spring temper wire attains a tensile strength of 120,000 psi—yet even then has an electrical conductivity of 50% IACS with correspondingly high thermal conductivity. This combination of strength and conductivity, characteristic of Phosnic Bronze, is unmatched by any other commercial alloy.

PHOSNIC BRONZE is of particular interest where phosphor bronze, silicon bronze and cartridge brass have been used in the past. Phillips head screws, nuts, switch parts, fuse clips, lock washers, cotter pins, springs — these are just a few of the potential applications.

PHOSNIC BRONZE is supplied in the form of rod, round wire, rolled flat wire and tube—in tempers ranging from age-hardened condition up to and including special spring.

Mail the coupon for the full story of this remarkable new copper alloy.



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(Concluded from page 31)

pion and equipped with equipment for tracking down other aircraft — for finding ground installations by day or night, in any kind of weather; and the X-4, a tiny experimental plane which company experts say is intended to "place a pilot and elaborate instruments in the 'trouble zone of sonic flight' and investigate tremendous distorting forces in a fine band of speeds lying immediate on each side of the speed of sound."

Furniture

Although individual plants in southern California are working at maximum capacity, the overall situation appears to indicate a slight decline in manufacturing activity in the furniture industry. A recent survey of a representative sample of factories revealed the following interesting information concerning employment and sales for October, 1948, as compared with October, 1947:

	No. of Plants	— Percentage of Increase or Decline — Employment	Unit Sales	Dollar Sales
Upholstery manufacturers	6	— 3.0	+ .8	+ 1.67
Case Goods	2	—14.0	—20.0	—20.0
Upholstery & Case Goods Manufacturers	2	—10.0	—12.5	—15.0
Mattress manufacturers	1	—10.0	—10.0	—25.0
Lamp manufacturers	1	—10.0	—10.0	+15.0

The California Department of Employment indicates that employment in the Los Angeles area in furniture and finished lumber products is up 480 persons since a year ago. The inconsistency here may probably be explained by activity in the finished lumber products industries.

HOUSEHOLD FURNITURE

Manufacturers' Shipments—11 Western States
From Bureau of the Census
(In thousands of dollars)

	Upholstered Furniture	Other Household Furniture	Total
3rd quarter, 1947	$11,047	$15,929	$26,976
4th quarter, 1947	13,336	21,098	34,434
1st quarter, 1948	10,633	20,739	31,372

Apparel

Seasonal pick-up in the garment industry is building up the West Coast industry's payrolls. Los Angeles is experiencing shortages of qualified sewing machine operators. Women's shoe manufacturing is running at a seasonally high level, as are other leather-working industries.

Although a heavy Christmas volume is expected, few in the trade profess ability to see beyond the holiday period. Inventories of some slower moving goods have been gradually climbing. This has been noticeably true in men's clothing. Some are forecasting an outbreak of price-cutting.

California Apparel Creators are laying out an unusually large national advertising campaign for 1949 to backstop the introduction of new Western-styled garments at January's trade shows.

APPAREL

(In thousands of dollars)
Total Women's, Misses' & Juniors' Outerwear

	Los Angeles	San Francisco
May	4,505	1,731
June	4,188	1,383
July, August, September	23,245	6,699
Oct., Nov., Dec.	24,948	6,844
Jan., Feb., March	30,173	7,897
Apr., May, June	19,052	4,521

	Men's Overalls (thousands of dozens) California	Men's Wool Work & Dress Trousers (thousands of units) California
January	34.4	90.7
February	26.8	85.3
March	33.0	109.6
April	29.0	92.6
May	27.7	86.3
June	30.4	76.1

ANY RETORT

OPENS OR CLOSES IN 4 SECONDS WITH THE HARRIS QUICK OPENING SAFETY DOOR

TIME the actual opening and closing of your present retort doors—then see what the Harris Quick Opening Safety Door will save you. Opening in 4 seconds, closing in 2, in some plants it is saving as much as 20 minutes on every load cycle. Result: more loads, more production.

A bearing mounted, rotating lugged ring interlocks a series of wedges on the door, making this efficient operation possible. This is not a split clamp ring, nor does the door revolve; only the ring moves. Eliminates gasket wear. Uniform pressure and sealing is insured at all points. Operation requires no special tools or wrenches.

Harris Quick opening safety doors fit any vertical or horizontal retort; will work equally well under vacuum or pressure.

All Harris Quick Opening Doors are A.S.M.E. approved.

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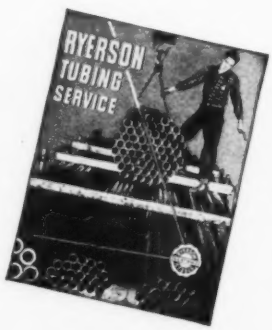
Your nearby Ryerson plant is a handy tubing center where large, diversified stocks await your call. Do you need mechanical or pressure tubing—seamless or welded; stainless tubing, pipe or pipe fittings? Practically any tubing requirement can be shipped on short notice. You save time because Ryerson has a wide range of sizes at plants from coast to coast. Probably there's a Ryerson tubing center near you.

In addition to quick delivery, Ryerson tubing service often gives an added bonus of time saved in your shop. All Ryerson tubing meets high standards of size accuracy, concentricity, straightness and finish. Machining time is cut to a minimum.

There's an experienced tubular products specialist at your Ryerson plant—ready to work with you on any problem of application or fabrication. We urge you to send us your tubing inquiries and orders.

Joseph T. Ryerson & Son, Inc. Steel-Service Plants: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles, San Francisco.

Do you have a copy of the Ryerson Tubing booklet just off the press? Its 32 pages are packed with useful information on tubular products, both carbon and stainless—tolerances, mechanical properties, helpful suggestions on grades and sizes, Ryerson stocks, etc. Write for yours today. ▶



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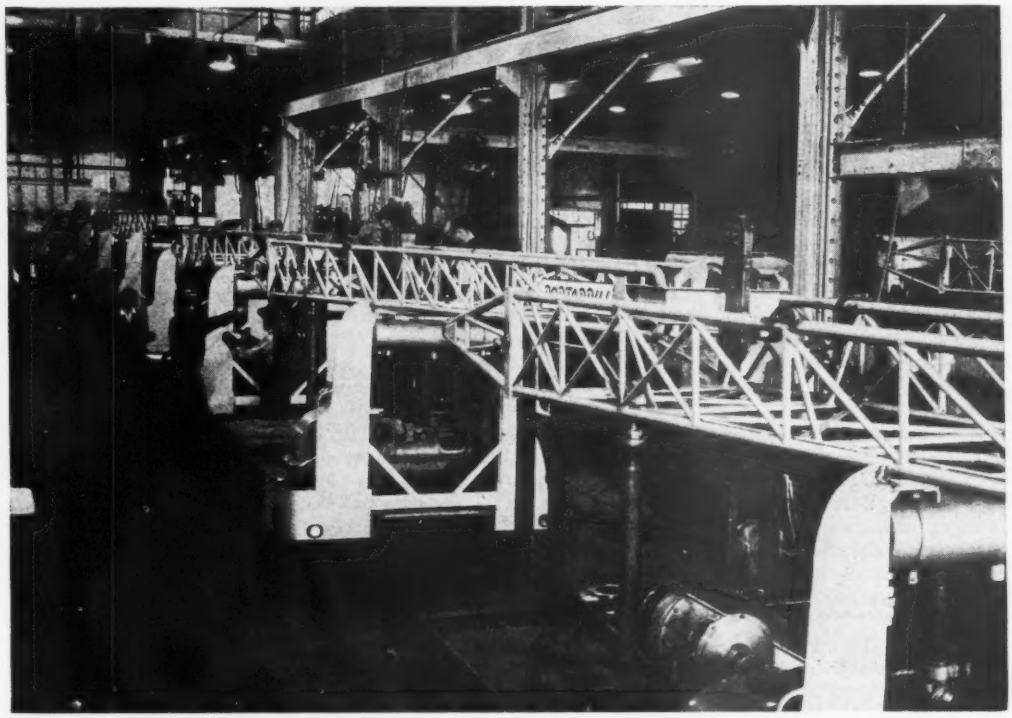
RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. Los Angeles Plant: Box 3817, Terminal Annex. San Francisco Plant: Box 188, Emeryville. Other Plants: Chicago, Milwaukee, Detroit, St. Louis, Cincinnati, Cleveland, Pittsburgh, Philadelphia, Buffalo, New York, Boston.

PICTURE OF THE MONTH



THE INDUSTRIALIZED WEST . . . *Denver and other Colorado cities contain an increasing number of plants serving world markets of which The Winter Weiss Company is one. This is a view of the Portadrill Production line in the Winter Weiss plant. The Portadrill is a rig mounted on a truck chassis providing a mobile unit for drilling wells.*

Sound Foundations for Growth Through Industrial Research

By Dr. J. E. HOBSON
Executive Director
Stanford Research Institute

DR. ROLAND P. SOULE, vice-president of the American Machine & Foundry Company, recently pointed out that one of the best tests of sound management, at least in the field of industry, is its attitude toward research.

"In industry, as in war," he said, "the only sure defense now lies in a strategy of attack. Paradoxical though it sounds, the most conservative attitude toward profits today is a policy of deliberate risk-taking. The biggest gamble is to do no research at all."

Until recently, many Western industries have had to take this biggest gamble of all. There were several good reasons, of course. While not blind to the value of research as a creator of products, processes, and employment, Western businessmen have been absorbed in the task of building their companies and industries from the ground up.

In many cases there was a supply of technological guidance from the east available to them. Only now are they beginning to find the time and energy to tackle the job of making the best and most economical use of their materials, resources and opportunities — a job in which research must necessarily play an important part.

Equally important, until lately the West has not had centralized applied research organizations where help could be obtained for the solution of its technological problems.

The region is well provided with resources for fundamental research, as in the laboratories of its great universities; but with the exception of a few of the largest industries with their own research departments, Western enterprises have not had easy access to facilities for translating fundamental science into products and processes of commercial value. Providing such facilities is the function of an applied research institution.

Realizing how necessary research has become to the continued economic growth of the West, a group of forward-looking industrialists and the trustees of Stanford University, in November, 1946, founded the Stanford Research Institute, an inde-

pendent, non-profit organization with its own laboratories, staff, and equipment.

Essentially the Institute is an integrated team of scientific personnel and equipment, organized so that its facilities are available on a business-like basis to any company, group, or individual with a research problem. Here specialists in almost every field of modern science are brought together so that they may work efficiently and economically in the service of many clients. As an independent organization, the Institute can provide confidential services, patent protection and other elements vital to productive effort for sponsors in the applied research field.

Although less than two years old, the Institute already has a staff of more than 150 engaged in research in 22 industrial and economic fields, and a yearly volume of more than $1,000,000 in research projects. This rapid growth proves that it is filling a real need in the economy of the West.

Naturally enough, some of the region's largest industries were among the first to make use of the Institute's services. Large industries are experienced in research; they know it pays. Even though they have their own research organizations, they call upon the Institute to carry out projects which are not suited for assignment to their own staffs, or which require specialized equipment or specialized knowledge.

A typical example is the oil industry, for which the Institute is now conducting several research programs. Stanford Research Institute projects sponsored by oil companies include one for developing new ways to make products derived from petroleum, another for making synthetic detergents from petroleum products, a third for analyzing and evaluating waste products, and a fourth for investigating certain oil lubricating problems.

RESEARCH IN 22 FIELDS

Analytical chemistry, applied physics, bibliographic services, business and industrial economics, ceramics, colloidal and surface chemistry, electronics, explosives, extreme pressures, food and agricultural chemistry, food technology, geophysics and geology, applied mechanics, industrial physiology, inorganic chemistry, petroleum chemistry, physical chemistry, psychology, special instrument design, and international technical and economic research.

A project of broad regional interest sponsored by the oil industry is Stanford Research Institute's investigation of the causes and nature of the smog which, from time to time, afflicts the cities of the southern Pacific Coast, particularly Los Angeles. This study illustrates the advantages of the Institute's flexible staff, because it involves the services of research specialists in half a dozen different fields, ranging from meteorology to colloid chemistry. Moreover, it requires the use of specialized equipment, including some developed and built expressly for this project in the Institute's machine, carpentry, and glassblowing shops. The program is sponsored by the major petroleum companies of California partly as a guide in their own efforts to avoid contributing to the smog, but also as a public service, and for the aid of all concerned with the problem.

Other current projects for private sponsors run the gamut from mineral surveys to bibliographical research; from food technology to electronics.

Among the interesting projects on which the Institute is currently engaged are several in the fields of geology and geophysics. One, sponsored by an industrial research organization, is the development of a new method of geophysical prospecting. This method promises to provide seismic means for oil exploration that will be several times faster and cheaper than present methods.

Another project is a study of the causes of soil subsistence in an important industrial area; one of the largest research programs in soil subsistence ever undertaken.

The Institute is also active in the field of food technology — an area of great importance to the agricultural West. For one company, research is in progress to develop a new beverage; for another, a method of simulating a certain natural flavor. New sources of sweetening foodstuffs, new kinds of non-returnable containers for liquid foods, and a new method of bolstering the nutritive value of foods are the objectives of still other projects.

• Moisture content of plant material can be determined quickly and fairly accurately by employing this simple xylene distillation procedure as demonstrated in the food technology laboratory of the Stanford Research Institute at Stanford Village, Palo Alto

Applied research in industrial economics is a relatively new field, in which the scientific approach and methods of mathematical and statistical analysis are applied to production, economic, and management problems of business and industry. The Institute is uniquely equipped to undertake problems of this kind, and has recently completed, for the U. S. Air Force and Navy, a computation of how fast the country's airframe industry can expand in the event of a national emergency.

Allied to this study is another, for determining the expansibility of the aircraft engine industry, and one designed to analyze the values of statistical quality control for aircraft components.

The government has also sponsored research at the Institute to develop a readily available source of natural rubber. Several scientific advances were made, including a means of increasing rate of rubber formation in guayule, a radically new grafting technique, and a new genetical theory in hybridization.

A number of other government projects are also being conducted at the Institute. For the Navy, the Institute is developing a new basic theory of the properties of liquid surfaces. This will have many practical and technical applications. Knowledge of how surfaces behave is essential to an understanding of lubrication problems, wetting problems, certain types of physiological and medical problems, and many others. A study is also being made of the cause and stability of bubbles and froths.

To these and many other problems, the Institute brings appropriate technical equipment, including standard laboratory apparatus as well as specialized equipment designed at the Institute and built in its workshops. Among the usual facilities now under development are a precision gage laboratory and an electronic tube laboratory.

• Dr. J. E. Hobson became the executive director of Stanford Research Institute in March. He served for four years as director of Armour Research Foundation in Chicago. He received his Ph.D. from the California Institute of Technology in 1935.

All these facilities are available to Western industries on a business-like basis. The sponsor has absolute control over publication of the results of the research. He has complete patent protection. When desired, the work done can be kept completely confidential. The Institute is organized as a non-profit institution, which means that research is carried on at cost.

Putting the Institute to work on a new project is a simple and easy procedure for the sponsor. All that is necessary is to get in touch with the Institute, by letter, telephone, or in person. Men skilled in the analysis of a research problem will immediately study the sponsor's project, will make an estimate of the time required and the probable cost. If this meets with agreement by the sponsor, a contract will be drawn up, and work will commence.

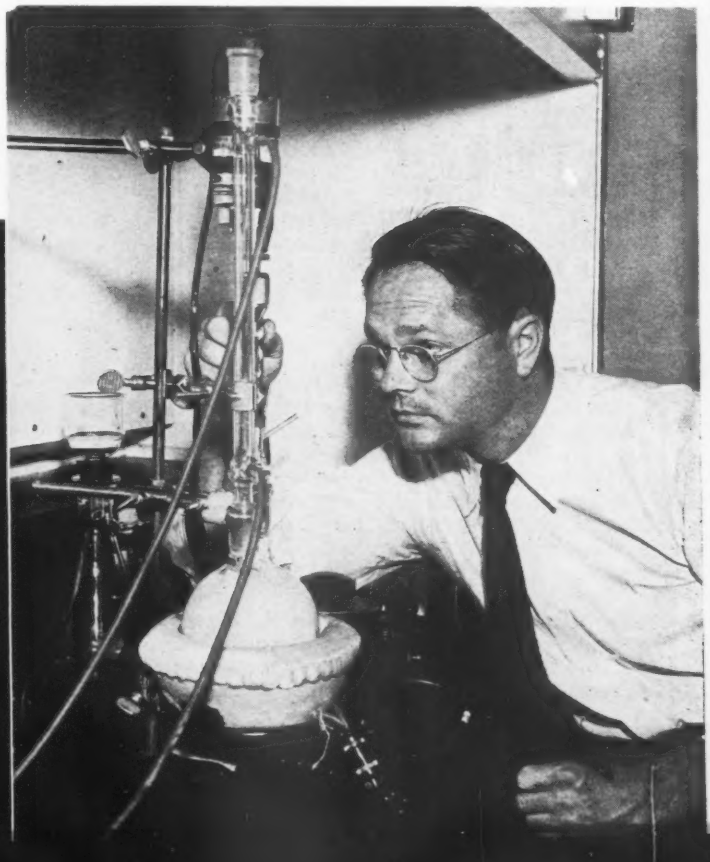
In most cases the sponsor receives monthly confidential progress reports on the work as it proceeds; in some cases these written reports are supplemented by personal conferences with the project leader. The Institute keeps closely in touch with the sponsor's own organization, except when the sponsor desires it otherwise. This assures that the solution to the problem will be readily adaptable to the sponsor's needs, and can promptly be put into practice by the sponsor's organization.

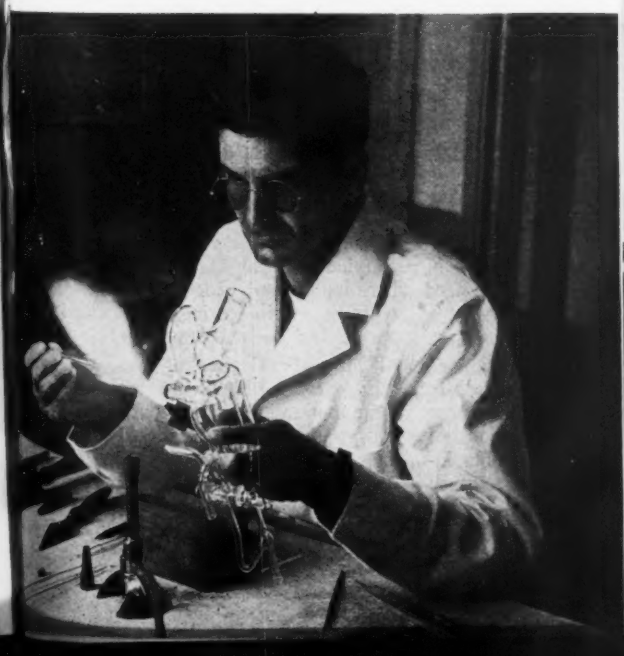
In addition to its headquarters at Stanford, the Institute has recently established a division in Los Angeles, and may eventually establish other regional divisions where the volume of research and the advantages of nearness to the sponsor and his problems warrant. The Institute is rapidly expanding its staff and facilities to meet the research needs of all the diverse industries of the Western region, and is thus pursuing its basic objectives, as outlined in its charter:

> . . . to promote and foster the application of science in the development of commerce, trade and industry, the discovery and development of methods for the beneficial utilization of natural resources, the industrialization of the Western United States of America, and the improvement of the general standard of living and the peace and prosperity of mankind.

• Dr. Richards (right) of organic chemistry section of the institute conducting experiments in the formation of new polymers.

• Robert Perthel (below), skilled glass blower, prepares any specialized equipment which may be needed for conducting research.





• Lumber for somebody's home or plant gets under way. Pond saw cutting wet logs to roughly standard length before entering the mill.

Lumber Industry Has Many More Mechanization Possibilities

By MILTON H. MATER
Mater Machine Works, Corvallis, Oregon

MOST lumbermen are finding that the way to keep lumber from pricing itself out of the reach of the consumer is mechanization and more mechanization of every phase of lumbering.

In fact, the lumber industry is now in the process of mechanizing its operations to a greater extent than many lumbermen ever believed possible.

It is imperative at this time for several reasons. First, labor's proportional share of the cost of getting a tree into and through the sawmill has increased as much as 200 to 300 per cent in the past decade. The cost of machinery has gone up, too, but only to the extent of about 15 per cent; therefore mechanization is a profitable investment.

Second, much of the equipment in use in the lumber industry today is old and out-of date. Authorities in the industry claim that "rejects" — lumber which does not hold sufficiently close to marketable dimensions — are the highest that they have been for several years. Accurate, modern machinery must be installed to cut down the waste of "rejects."

As the industry is enjoying both prosperity and the availability of equipment, lumbering can now begin to take advantage of the advances in welded steel construction, portable diesel power, and the greater spread of electrical power which have taken place since the last period of modernization in the boom which followed World War I.

Third is the dwindling supply of available first growth timber. It is estimated that only one-third of a log is wasted in the mills. Many organizations throughout the country are working on methods of utilizing wood waste, but the lumber industry itself is striving to eliminate much of the waste in logging and sawmill operations, and at the same time endeavoring to provide perpetual supply through "sustained yield" programs and tree farms.

Cutting down a tree is the first phase in changing a tree to a board. Despite the application of machine power to almost every other operation in the industry, the cross cut saw, operated by two men pushing and pulling, remained as the instrument for felling a tree from the time of its introduction 60 years ago, until World War II. Then the lack of manpower, coupled with the high demands for lumber, led to the wide acceptance of two types of gasoline driven mechanical saws for cutting down trees.

One of these is the dragsaw — a reciprocating straight blade saw which has the same motion as the push-pull of the cross cut saw, except that it is powered by motor. The second type, the chain saw, is based on the revolutionary conception of putting

saw teeth on an endless chain and stringing it around a long, steel arm. A demonstration of the advantage of this type of saw was given by Southern pine operators who "felled" (cut down the tree) and "bucked" (sawed the felled tree to usable lengths) as much timber in one day as they could cut in four days using the cross cut saw.

Power saws save not only time, but also "stumpage," the amount of a tree which is wasted as stump. Men operating hand saws cannot get down to below 10 or 12 inches on a log; a power saw, however, can get down as low as two inches from the ground. The saving of eight inches per stump becomes a sizable amount on 100 logs. Tests performed in Alabama showed a savings of 6 per cent in stumpage when power saws were used.

Another improvement in tree felling has been made by substituting light weight magnesium wedges and sledge hammers for the heavy steel which has previously been used for these tools. Fallers and buckers formerly had to carry all their heavy equipment from tree to tree in several trips. The light weight equipment cuts down the number of trips in felling each tree, thereby reducing the cost of this operation.

Transportation Achievements

After the trees are cut, the logs must be transported from the woods to the sawmill. The introduction of the tractor and the truck in logging virtually revolutionized logging procedure. In the southeast the tractor made possible selective logging of usable trees without destroying young trees, changing the attitude of that region from logging out a forest to accepting the idea that forests can be self-perpetuated.

In the Northwest, tractors took the place of great teams of oxen and horses which dragged logs out of the forest on high-wheeled carts. Streams in the Northwest are too few and too small to permit the dramatic river logging drives, such as are possible in Canada and other parts of our country.

Lumbermen formerly had to run railroad spurs up to the woods, where they cut roads and dragged the logs to the railroad spur. The logging truck made it possible for logging to go ahead much faster than would have been possible if logging depended on the railroads alone. Railroad spurs are expensive and take a long time to build, while logging roads are cheap and easy to lay in.

Heavy Loads Carried

The normal capacity of a logging truck is about 40,000 pounds of logs. Trucks with a larger capacity are built now. The "Dart," for instance, a log truck with an 80,000-pound capacity, operated on butane gas, is an example of the type of progress being made. In modern logging procedure it takes only eight minutes to load a truck of this size. The operation requires two men working with tongs from a "skyline," a type of crude lifting cable and trolley device, and one operator.

With the truck have come many machines for loading and transporting logs to and from the truck, all ingenious and useful in cutting costs.

The next step in converting the tree to boards is the sawmill, varying from small, one-man portable mills which may cut a few thousand board feet a day, to large band mills which cut to as much as over 1,000,000 board feet daily.

Many Sawmill Changes

Smaller and medium sized sawmills usually use a circular saw, a circular disc of steel from 40 to 60 inches in diameter with removable teeth. The circular saw was invented in 1820 by a New Yorker, and a large percentage of the saws used today are still made in New York.

The larger mills favor the band saw, an English invention which gained popularity in this country about 1880. There are probably about 1,000 band mills in this country, which produce more lumber than all the circular mills put together, although the latter far exceed the band mills in number. A large sawmill like the Weyerhaeuser Timber Company, in Longview, Washington, produces as much as 1,500,000 feet of lumber a day, enough to make 1,000 small homes.

One of the pressing current needs in the lumber industry is a smaller, moderately priced band saw suitable for medium and small mills. The teeth on circular saws are considerably thicker than those on band saws. Therefore in sawing, the thicker circular saw wastes almost one-third more of the log that does the band saw, the waste going into sawdust instead of lumber. Increased application of the band saw in order to waste less of the log is an important conservation measure.

Three schools of thought have developed among progressive millmen on the future of the lumber industry and the proponents of each are spending millions of dollars building sawmills to back up their ideas.

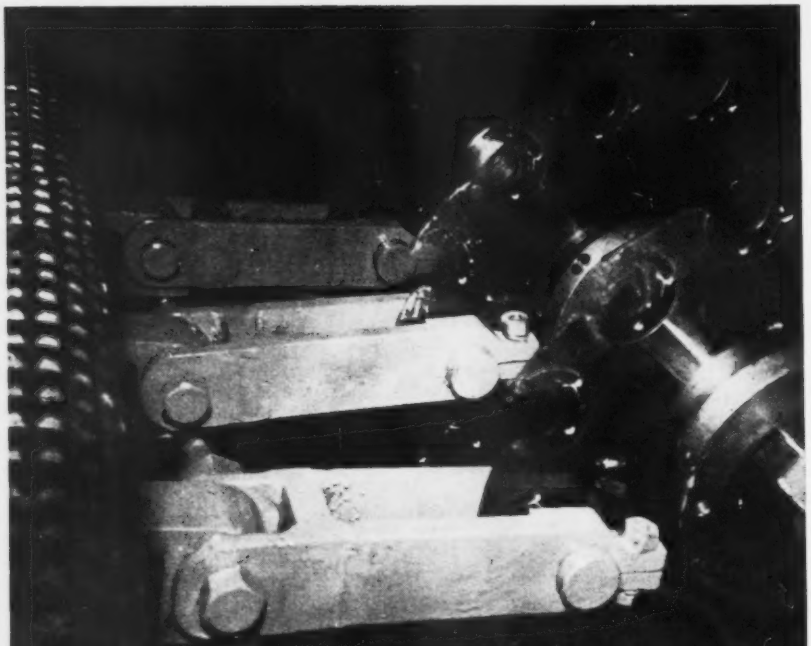
Some of the larger lumber interests believe that only a large size mill, one cutting at least 100,000 board feet a day, backed up by enough timber to allow a sustained yield program, can provide lumber at low enough prices to survive in a normal market. A 100,000 band mill working 300 days a year will cut 30,000,000 board feet or about 20,000 trees a year. A sustained yield program must produce that many new trees every year to feed this mill.

The larger mills have all the advantages of size, better equipment and money for maintenance, research and expert management. Their research staffs are able to utilize what must otherwise be discarded as waste by the smaller mill, even the bark.

Despite their advantage, large sawmills suffer from a lack of flexibility. For instance, the large crew makes the curtailment of production when demand slackens a difficult procedure. They also feel the disadvantage of distance from the source of supply. The cost of trucking logs into the mill increases with the distance of the mill from the forest. The size of the mill prohibits moving to the cutting front. The two factors of bigness versus distance must balance each other for a mill to operate profitably.

(Continued on page 40)

• Log turner in action . . . many mills have not yet installed this time-saving device.



• Saw shifters on edger. Irregular slabs are "edged" to commercial widths on "edger."

(Continued from page 39)

Other sawmill men believe that the future of the lumber industry is in the hands of the medium sized mill. These mills, cutting between 25,000 and 75,000 board feet a day, are operating with increased efficiency, due to improvements in machines and the greater ease of replacement of antiquated machinery by modern equipment. Probably some of the greatest strides in mechanization are taking place in this type of mill.

The third school of thought favors the portable sawmill which can be moved from cutting area to cutting area with relative ease. Portable mills are discussed more fully later.

The Modern Sawmill

The modern sawmill—whatever its size—follows a standard manufacturing procedure. Logs are stored in a mill pond where the water cleans and serves to wet them thoroughly. Wet logs cut better than dry. At the entrance to the mill a "pond saw" cuts the logs to roughly standard length, after which they are pulled up a timber chute of about 45 degrees by cable or drum to the "log deck."

Here the sawyer has the log rolled down to the "carriage" — a movable vehicle which feeds the log into the saw, equipped with special devices for "dogging" (holding the log steady while cutting), and with "knees" against which the logs are gripped by the dogs. The "setter," who works on the carriage, can determine the width of the board cut from the log by using the set works. When the bark "slab" and a few other cuts are removed from the log, a "log turner" turns the log a quarter turn. This process is repeated until the log is cut down to as large a square as possible without any bark, and then boards are cut from this square.

This is one of the most economical ways to cut a tree. The thickness of the board is determined by the sawyer, who signals to the setter what distance the log shall be set out. The big, crude, irregularly shaped slab is "edged" to commercial widths on the "edger," a machine with small circular saws which cuts through the full length of the board.

A board, called the "cant" at this stage, might go into the edger two inches thick and 40 inches wide with the bark of the log still on both edges. The saws could be set 12 inches apart, making three 2x12-in. boards out of the "cant" which entered it. The bark or "wane" edges are discarded as waste. The boards are then trimmed to a standard commercial length by a "cut-off" or trim saw.

The boards, now cut to desired width, breadth and length, finally land on the "green chain" where they are sorted according to grade and size. Larger mills have planers which dress the rough lumber to the smooth finish required for most uses. Some of the larger mills also have dry kilns to expedite the seasoning of wood, but the seasoning process is mainly one of air drying.

Many mills employ the practice of merely cutting off the bark and squaring the log and then passing the resultant "cants" to a resaw, where a battery of saws or a fast special band saw speedily cuts the cant to commercial widths. This saves the time of cutting the log to width on the carriage.

The equipment described above is essential for a fast-cutting mechanized mill. However, many mills have not yet installed such labor saving devices as log turners, mechanical transfer chains, mechanical hoists and similar equipment.

In mills without these aids the sawyer, who controls the cutting of the log and is one of the highest paid men in the lumber industry, must perform many duties not specifically connected with his skilled work. Where a mill lacks a log turner, for instance, the sawyer must leave his post to set the log in place on the carriage, then walk back to take his place at the saw husks where he controls the speed of the cut and the motion of the carriage. Employment of the sawyer for such miscellaneous duties slows down production and adds to the cost of lumber.

Quality and rate of production of the lumber manufactured by any mill depends more on the quality of the carriage and edger and other basic equipment than on any other factor. Machines which are not accurate, or not adjusted, or not kept in repair result in irregularly sawn lumber, thick and thin in the same piece, thin on one edge and thick on the other, and other defects which cause rejections and add to the cost of manufacturing lumber.

Boon For the Medium Mill

The medium sized mill received a virtual shot in the arm with the introduction to West Coast mills last year of the hydraulic carriage drive, such as the Oilgear motor which feeds the carriage to the cutting saws at any desired speed and returns it rapidly to its original position.

Practically all large mills use steam for driving the carriage back and forth. However, for a medium or small mill the use of steam involves not only a high installation cost, but requires the labor of a steam engineer, who is not directly connected with the sawing of the wood and becomes an overhead burden. It is apparent that a mill employing 10 men to cut 50,000 board feet a day will find that the addition of another man increases costs.

Smaller and medium mills use friction feeds, various types of belt feeds, electric and air feeds. Each type has its disadvantages, most of them suffering from an inherent lack of flexibility. They are slow in returning the carriage to its initial position after the log is cut. The minutes lost in the slow return mount up to one or more less logs cut per day.

Moreover, once many of these drives are set they cannot be adjusted for the different speeds of feeding to the saw demanded by different size logs. The mill will set the feed for the average log and then the carriage will move too quickly for the large log and "choke" the saw, and too slowly for the smaller one and lose time.

Hydraulic carriage drive, however, gives the medium mill all the advantages of steam—rapid return and easy adjustability—eliminating at the same time the high maintenance cost of steam. Because the

hydraulic drive requires no attention, the savings of a man's wages is one of its features.

The New Portable Sawmills

The small, portable sawmill is rapidly taking its place as an important mill in the lumber industry. The small, portable sawmill which may be moved from place to place is particularly important in logged out areas.

Sawing near the logging operation reduces waste. Operators of portable mills can select usable portions of the log in the woods, often eliminating the expensive hauling of unusable parts. Furthermore, the hauling of lumber becomes easier for the portable mill. More lumber can be hauled from a rough "green" mill producing unfinished lumber to a finishing plant than an equivalent weight load of logs.

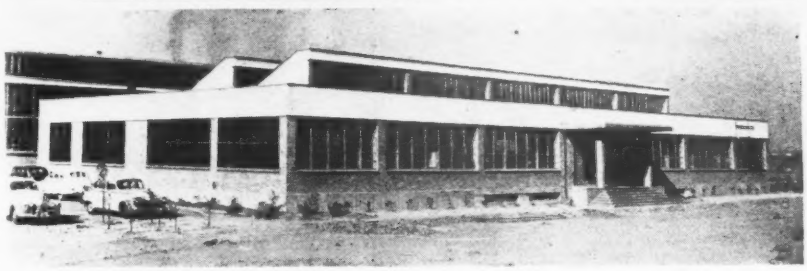
Farmers have long used portable sawmills cutting under 5,000 board feet a day. More interesting, however, are the new portable mills which produce up to 50,000 board feet daily, and are sturdy enough to break down four and five-foot old-growth logs of Douglas fir and Sitka spruce stands. A mill of this type has been operating on the West Coast for over three years with considerable success.

West Sets the Pattern

Lumbering on the West Coast, which produces almost half of the country's lumber, has always been more highly mechanized than the other great lumber producing section of the United States—the southeast. Machinery was forced on the Western lumber industry in its early days because Western timber is large and manpower has always been scarce, making the employment of machines imperative.

The south found during the war, and is continuing to find, an inadequate and inefficient labor supply which has prompted mechanization in that area. Early in 1946, southern millmen created a Committee on Mechanical Efficiency to adapt the mechanical techniques used on the West Coast to the smaller timber and different operations in the Southern pine and the hardwood industries. That the southeast needs increased mechanization is evidenced by the fact that the more efficient West Coast operations average about 86 board feet per man hour while the south averages only 34½ feet.

Many labor and material saving practices have been adopted recently. More efficient use of lumber is obtained by replacing such imperfections as knots, wormholes and other defects which lower the grade of wood with plastic wood. A patching machine cuts the knot out of a sheet of veneer and fills the hole with a perfectly fitting piece of solid wood, all in one operation. The mechanical advances in seasoning wood have been many. Wood as it comes from the mill is called "green" wood. "Green" wood must be scientifically dried, or seasoned, to avoid changes in dimensions or damage during removal of the water.



Day-Lighting Inside Offices

AN industrial office building that is unusual not only from a standpoint of efficiency but from a humanitarian angle, is the new home of Food Machinery Corporation's John Bean (Western) Division at San Jose, California.

Every employee has the opportunity to work under natural light no matter where in the building he is located. An attempt was made to calculate enough admittance of light from the outside so that on an overcast December afternoon it would not be necessary to resort to artificial light, and the whole design of the building was based on approaching this ideal as closely as possible.

First layouts indicated that the principal problem was going to be how to provide enough light in the central portions of the structure, which is 90 x 174. Because the private offices had been laid out around the perimeter of the building, the drafting room and offices in the middle were almost cut off from all light. It therefore became necessary to provide openings in the middle of the structure, and this led at once to the saw-tooth type of roof construction. Even then it was found that illumination admitted this way did not give equal and even distribution.

To overcome the effect of extreme lights and shadows, a reflecting type of acoustical tile was installed, which allowed the light admitted through the sawtooth to be reflected at an angle back through the central portion of the office. As a result, regardless of where an employee is stationed, he is not bothered by a shadow from any direction.

Artificial lighting was also designed to achieve a similar result. All fixtures were spaced evenly on 10-foot centers to give 40 foot-candles at desk height.

Among the other interesting features of the new building is the use of flexible metal partitions for private offices, which are arranged along the outside walls. The partitions are not supported by any trusses or columns, and a rearrangement of offices can be accomplished in short notice with a minimum of trouble and expense. They were also designed not to interfere with the distribution of light. The entire building is air conditioned for constant temperature control, winter or summer.

NEW PRODUCTION TECHNIQUES

Bridging the Chasm Between Practical Tests and the Lab

By DR. T. A. SCHWARZ
Chief Chemist,
California Prune & Apricot Growers Assn.
San Jose, California

A BRIDGE over the chasm separating practical package testing from what may be called laboratory type testing can be established for many food products by using the vapor pressure difference existing between the outside and inside of the package judiciously.

Vapor pressure difference, which expresses both percentage of relative humidity and degrees of temperature in one unique term, is the driving force behind moisture vapor loss from a package. Consequently you can assume with a good deal of justification that the weight loss of a package is proportional to the vapor pressure difference.

In our experience at Sunsweet, a simple accelerated storage test, as long as it is comparative in nature, can answer many questions which the laboratory cannot. Our approach and procedure is usually as follows:

Inasmuch as we are interested only in the performance obtainable with our equipment, and under our operating conditions, we insist that any potential material be of such sample size as to permit us to make a production run of at least 10 minutes on our lines. The specimens are then taken directly off the line and notations on machine performance are made at the same time.

Such test specimens naturally do not reflect only the inherent properties of the packaging material, but also reflect the workmanship which can be obtained on folds, seams, and seals. A minimum of six samples of each type is used and we always run with it an equal number of regular packages as a basis of comparison. On these so-called regular packages, we have a backlog of testing performance which shows us the outer limits of variations, reproducibility and many other things. The regular or blank packages are wax paper lined fibreboard shells with tight wrap foil labels produced on pneumatic scale lines.

Some of the general observations which we have made on that type of package may be of interest.

1. If the foil is used as a liner instead of a label the overall protection obtained is significantly lowered. Reason: ineffective liner seals.
2. Liner's contribution to overall impedance is negligible; its function is more to prevent physical contact between food and chipboard shell and for esthetic reasons.
3. The carton stock can contribute to impedance by virtue of affecting adhesions between label and board, which can vary from a loose bond to a lamination type board.
4. On highly vapor resistant barriers the tightness of the seal becomes the determining factor. On that type of package, the mechanical tightness as measured by my method is a direct measurement of the moisture impedance.

This experimentally proven fact brings up the question of how important seal tightness is on packaging materials of lesser impedance value than foil.

Qualitatively speaking, the relative importance decreases with increasing permeability of the packaging material and becomes relatively insignificant in materials like regenerated cellulose films.

The packaging industry is not so fortunate when it comes to achieving efficiency in visible packaging, and our own experience is probably typical of many others.

Before the war we had what we called a brick or tile pack which required six times as many manhours as on a carton line. When transparent materials became

• At least 10-minute production runs are required by Sunsweet when testing packaging materials at plant No. 11, in order to judge both materials and workmanship.

available again after the war, we looked for alternatives and decided to try out two possibilities, a bag pack and a so-called tray pack with a visible overwrap.

This brought us face to face with the problem of equipment. Judging by the number of items in the grocery stores, either of bag packs or tray packs, you would think that packaging machinery and equipment would be readily available.

Nothing could be further from the truth, as we soon found out. As you enter the field you are confronted with beautiful performance claims and you find yourself continuously trying to catch up with this type of "prenatal" advertising. That goes for both materials and machinery. In other words, you start practically from scratch and learn as you go along. Because everybody else uses makeshift setups, you develop your own Rube Goldbergs.

Packing a Key Factor

When you design a packaging line which starts with a hand operation, like bag opening (which to my knowledge cannot as yet be done automatically) you are apt to lose the most important element of a modern production line: namely, the pacing of the operators. Try as you may, you just cannot get the amount of production per man hour of which you know the operators are capable. Without pacing we all tend to set a tempo which is below our normal capacity and if a crowd is involved we very sympathetically slow down a little more so as not to show off some poor fellow who is somehow handicapped.

In my opinion, the importance of pacing in modern packaging line design cannot be over-emphasized. Bag lines will begin to hum, if somebody gives us a bag opener that sets the pace of the line. We understand that there is a bean bag line, the first of its kind now in operation on the Pacific Coast. This line forms the bag on a mandrel and presents the bag to the automatic filling station, topsealer on to the casing operation. Every bag user will follow this development with the keenest interest.

Heatsealing Weaknesses

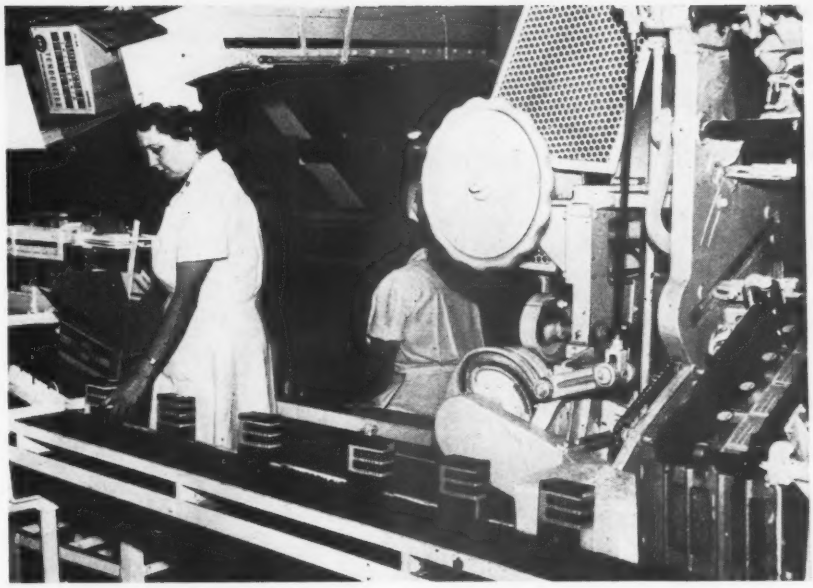
In discussing bag line problems let us touch briefly the question of heatsealing thermoplastic bags. Before the last war heatsealing operations were confined to moisture proof cellophane sealing and some experimental sealing of thermoplastic films. Hand sealers, jaw sealers and a few models of rotary sealers were the only tools available for the purpose.

Some improvements have been made, principally by users like ourselves, but the package machinery manufacturers have not undertaken the development work on a scale commensurate with the problem on hand. Just to mention one common weakness of most sealers, there is the matter of temperature control, which is particularly important on thermoplastic films with a very narrow softening range.

As a rule, the temperature lag is so great satisfactory seals are difficult to make. By that I mean that the surface temperature on the sealing iron just before the thermostat cuts in is too low to soften the film and too high when the thermostat cuts off. This condition can be partially overcome by using a bag top, or other devices which slow down the rate of heat transfer.

Another factor is that the surface temperature on heating plates such as are built in, in wrapping machines is not determined by the thermostat setting but depends appreciably upon the load on the machine. At 40 packages per minute the setting will be lower than at 60 packages per minute.

I have often wondered why somebody has not developed heaters in which the heating medium is a fluid circulated by a pump and heated externally. The heating problem has been solved in the chemical industry, why can it not be solved in the packaging industry? We hear through the grapevine that several base material producers are working on this and related problems and I am sure we all wish to commend them on their efforts, which should bear fruit in the near future.



• Minimum of six samples of each type used in test runs, and an equal number of regular packages run through at same time to provide adequate basis for comparison.

New Method Devised For Testing Water

Development of a new method to test water pollution caused by industrial plants is announced at the University of Washington. New equipment used by the university engineers has been devised by modifying a Van Slyke apparatus used for clinical tests to determine the gases in blood.

Professor Richard G. Tyler, director of research, said the new process will be especially useful in investigations to reduce stream pollution caused by sulphite waste liquor. He said that by testing samples of industrial waste it is possible to predict accurately how much oxygen will be consumed when the waste is discharged into a stream.

By treatment of the waste before dumping it will then be possible to avert damage to fish life caused by lack of oxygen.

New Zinc Process Steps Up Recovery

Successful tests have been conducted at the Mead magnesium plant near Spokane, Wash., on a new process for smelting zinc that may greatly increase the nation's output, Dr. Francis C. Cary, mineralogist of Wilmington, Del., reports.

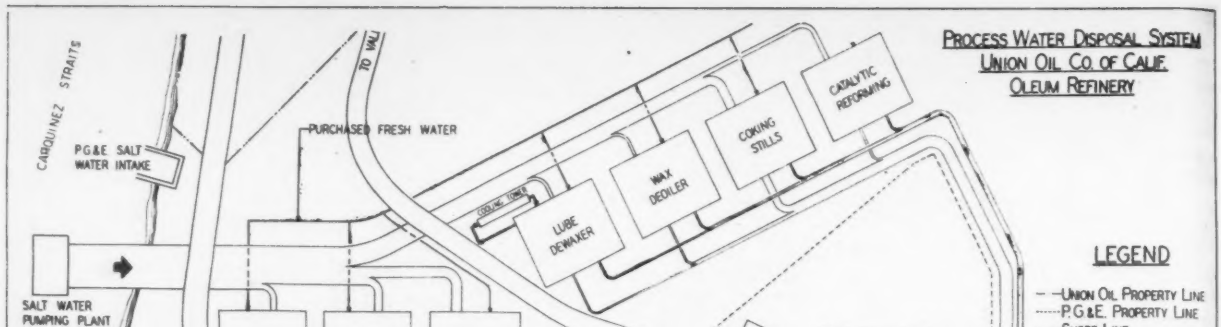
Dr. Cary predicted that analysis of the residue should show more than 99 per cent recovery compared to returns of from 70 to 87½ per cent by other methods. He described the new method as a new means of smelting ore concentrates in vacuum. It has been developed by Hybinnettes & Cary.

Tests have been conducted on more than 40 ores from Washington and Idaho and from New Mexico, Canada, Australia, Bolivia and elsewhere.

Mechanical Hoe For Large Farms

A mechanical hoe run by compressed air has been invented by Frank King, sugar beet grower of Woodland, California, especially suited to large row-crop farms. Up to 20 rows at once can be weeded with them. The hoes cost about $165 each to make.

A tractor draws an air compressor slowly down the field with 4-10 air hoses attached on each side. Each hose is connected to a specially-built hoe with a piston at the top end of the handle. Compressed air jabs the blade back and forth in the ground. All the operator does is guide it. The stroke is adjustable, from less than one to over three inches. Blades are detachable.



Oil Refineries Also Find Waste Disposal Systems Essential

(Fourth article in a series dealing with water pollution treatment)

TYPICAL examples of public misunderstanding of how industrial waste disposal is handled by some of the major Western companies are those of the Standard Oil Company of California refinery at El Segundo, and the Union Oil Company of California refinery at Oleum.

For years, people using the Southern California beaches have cursed the oil companies for polluting the water and the sand with gummy black deposits of oil along the tide line. In San Pablo Bay, Union, Shell and Tide Water Associated have been blamed for destroying game birds and fish by dumping industrial waste into the water. Yet testimony in the Dickey Committee of the State legislature, shows that virtually all of the oil found on the beaches comes from natural oil springs on the floor of Santa Monica Bay, while other unpleasant deposits along the beaches consisted of sewer grease discharged by the Hyperion outfall of the Los Angeles sewer system. At Union's Oleum refinery, no waste water is discharged into the bay without primary, and usually secondary treatment.

The El Segundo refinery of the Standard Oil Company of California was established in 1911, on a barren waste of sand dunes far from any habitation. The city of El Segundo has grown up as a natural result of the need for housing refinery employees, and the refinery itself has grown into one of the largest in the country. Crude run to the stills at El Segundo is in excess of 100,000 barrels per day, and nearly 2,500 persons are employed in processing operations.

Since it is situated on the ocean front, salt water is used in large quantities for cooling purposes, and wherever the corrosive properties of the water would not damage equipment or products. Fresh water is taken from wells for use in broilers and some other parts of the plant, and of course, for domestic needs.

In processing crude petroleum, it is necessary to separate it into various products to meet market demands. Primary separation into desired fractions is accomplished in the crude stills, where heat is added to vaporize the lighter components of the crude in various towers and columns. Vapors from these towers and columns are then cooled and condensed.

Although much of the heat first used in vaporizing oil is recovered, additional cooling is often necessary and is accomplished by passing the fractions or cuts through water-cooled heat exchangers. Sea water is primarily used for this at El Segundo, although fresh water, circulated over cooling towers, is also used.

One of the most common types of heat exchangers used consists of a number of tubes enclosed in a shell with water flowing through the tubes and oil flowing around them. Constant checks are made to keep these leak-proof, but minor leaks do develop as result of corrosion, erosion, and temperature changes.

When such leaks do occur, the unit is

removed from service for repair, and elaborate facilities and drainage systems have been provided to recover all oils from such leaks. Oil which leaks into the cooling tower is recovered, and to be commercially usable, must be reprocessed. Since this is expensive, every effort is made to minimize such leakage.

Certain fractions produced in primary distillation require chemical treatment to produce satisfactory salable products. Such treatment involves addition of various chemicals such as sodium hydroxide, sulphuric acid, and sulphur dioxide. To remove traces of these chemicals after treatment, it is customary to give the oil a final wash with water. Such wash water contains negligible amounts of chemicals and some traces of oil. After processing the water in the separators, it is ready to be discharged into the stream of treated waste waters for disposal in Santa Monica Bay.

Water used in the boiler plants is, of course, fresh. It is obtained from wells and from water condensates recovered within the refinery. However, such water contains only solutions of inert salts normally contained in sea water, and its disposal does not present a contamination problem.

Sulphuric Acid Recovered

Next among the refinery processes is the cracking plant, where temperatures and processes do not permit the use of salt water for cooling due to corrosion difficulties. In the cracking process, gases are produced containing hydrogen sulphide, and a special recovery plant extracts and delivers this matter to a nearby chemical plant for conversion into sulphuric acid. This recovery and conversion system at El Segundo, operated since 1937, was the first of its kind used in the United States.

Other units not using salt water for cooling are the skylation plant, the isomerization plant and the Houdry plant. These all employ fresh water, which is reused by recirculation over cooling towers. All these use equipment similar to that used in the crude still, and these exchangers are also subject to occasional leakage, but to prevent loss of valuable products constant vigilance is exercised.

To avoid building up undesirable concentrations of salt in the system, a small amount of water is bled from the cooling tower basins, but since this water may have been in contact with, or contaminated by oil, it also passes through the refinery separators for recovery of any oil present. Units in the cracking plant area which use salt water for cooling include the refrigeration plant, re-run stills, desulfurizers, dehexanizer, copolymer and pentanes-plus plants. Conditions applying to these are similar to others already described. The gasoline treating plant in this area utilizes similar processes, and the same precautions are taken in the handling of wastes.

There is also a butadiene plant, owned by the Federal Government and operated by Standard Oil under contract. Both the material used and the product are non-odorous gases under normal conditions, but certain oils used within the plant are of a heavier nature, and from which heat is extracted by water-cooling. This cooling water is passed through separators for the recovery of any oil; however, the butadiene plant was constructed under emergency conditions during the war, and complete information was not available on the requirements of treatment of wastes prior to commercial operation. Such facilities have since been devised and installed.

Types of Oil Segregated

Long study has convinced Standard's engineers that the best way to handle waste waters from the refinery was by first separating the effluents from the various plants in accordance with the type of oil contained in the water. In addition to several millions of dollars spent on installation of separators at El Segundo, Standard Oil has also invested more than $300,000 in this segregation program. It is divided into three main classifications:

1. Clean water. This includes all water not requiring treatment prior to disposal, such as cooling water from steam condensers. It is kept away from all other types of waste water so as not to complicate treatment of the others.

2. Intermediate water. This includes cooling water which might contain oils easily removed by simple gravity separation — cooling water from heat exchangers handling oils heavier than butane but sufficiently lighter than water to separate readily. Three distinct separating units are used for this classification.

3. Oily water. This includes all other waste with the exception of sanitary sewage. Since this waste may require some pre-treatment prior to gravity separation, the pre-treatment is often incorporated in the operation producing the waste. Oils are removed at their source and returned to the plant from which they originated before they have an opportunity to mingle with any other type of oil.

Where odorous materials are handled and may contaminate water, elaborate facilities are frequently provided as part of the process. In such cases the water is processed to remove the odorous materials, which are then destroyed by combustion under the boilers.

Problems at Oleum

The Oleum refinery of the Union Oil Company of California presents a somewhat different problem, inasmuch as waste waters must be disposed of in the upper reaches of San Pablo Bay. Established in 1895, the Oleum refinery employs about 1,150 people on a permanent basis, and has a crude capacity of more than 50,000 barrels per day.

The water pollution problem has been under study by Union Oil engineers since 1900, when the first skimming basins were constructed in the lower refinery area. These were operated until 1922, when the basins were replaced by a separator similar to what is now the refinery's secondary separator. In 1941 a first stage separator was constructed, and the secondary was completely rebuilt. Two years later the final skimming basins were built, and in 1945 a chemical treatment plant was installed. It is estimated that today's replacement cost of this separator system would be more than $600,000.

Since the processes used in petroleum refining at Oleum are similar to those previously described, it will suffice to say that a waste water segregation program is also followed there. Water is classified in two types—clean water or oily water. Waters which do not contain oil or which have not come in contact with oil are passed through the skimming basins directly into San Pablo Bay. Oily waters are processed through a two-stage separating system for removal of oils and solids before discharge.

Because the Oleum plant is divided by U. S. Highway 40, two separate systems are used for collection of clean waters. As insurance against any discharge of oil into the bay that might have got in due to leakage, the clean waters go through the skimming basins first. Approximately 85 per cent of the water used is disposed of in these two systems.

Water Returned Good as New

Oily waters are collected from both sides of the refinery and pass together through the treatment plant. Oil in water emulsions stabilized by river silt are accumulated in both the primary and secondary separators, but these emulsions cannot be resolved in normal processing equipment because of the presence of the silt. Therefore, heat and chemicals are applied to separate the oil from the water and silt, and this effluent, essentially in the same condition as when it was drawn from the bay, is discharged through the final skimming basin back into the bay. Sanitary sewage from the plant is treated in septic tanks, from which approximately 75 per cent of the treated effluent flows through the oily water sewer to receive further treatment in refinery separators.

At both El Segundo and Oleum, ballast water and bilge from tankers and barges is discharged through lines to the shore and passed through the refinery separator systems.

The three other major refineries on San Pablo Bay are Tide Water Associated at Avon, Shell Oil at Martinez and Standard's Richmond refinery. In general the operations of all three are similar to those previously discussed. As at El Segundo, the Richmand refinery follows a three-way segregation of waste waters; another makes far more extensive use of cooling towers and therefore reduces the total flow from, and back into, the straits, while another makes use of a very large flow of water. Each of the refineries has extensive spills and oily water treatment systems.

Operating On "Cost Plus" Basis Through Simplified Records

REEVES RUBBER, INC.
San Clemente, California

MOLDED PRODUCTS SPECIFICATION

SPECIFICATION 50/0 CUST. PART NO. 5-12 NO. OF MOLDS 6 MOLD NUMBER SEE SCHEDULE
CUSTOMER JABSCO PUMP CO. ARTICLE IMPELLER 8 BLADES
STOCK NO. 400 PRESS SIZE 20"x20" RAM SIZE 10" LOADING POT LOAD INSERT YES
CAVITIES 6 CURE TIME 30 MIN. CHANGE TIME 5 MIN. CURE CYCLE 35 MIN. HRS./HR. 2 —
PCS./HR. 12 PCS./8 HRS. 84 PCS./24 HRS. 258 DEFECT ALLOWANCE 15

INSTRUCTIONS FOR RUNNING

1. RUN DOWN PRESS AND REMOVE POT & PLUNGER AND CARRY TO THE HYDRAULIC JACK.
2. BREAK MOLD WITH AIR-HOIST ON TABLE.
3. TAKE CENTER PLATE TO ARBOR PRESS AND REMOVE PARTS. APPLY EVEN PRESSURE. PARTS ARE EASILY BROKEN AND INSIDE EDGES OF MOLD EASILY DAMAGED.
4. EXAMINE PARTS AND NOTIFY FOREMAN OF ANY REJECTS (BLISTERS, CRACKS, ETC.)
5. PUT INSERTS ON PINS OF BOTTOM PLATE. (BE SURE INSERTS ARE ON BOTTOM OF PINS.)
6. PUT CENTER PLATE ON.
7. SLIDE MOLD INTO AIR HOIST AND LET TOP PLATE DOWN.
8. PLACE POT ON.
9. PLACE PRE-HEATED STOCK INTO POT.
10. PLACE PLUNGER OVER STOCK.
11. SLIDE MOLD INTO PRESS.
12. RUN-UP PRESS AND CURE.

PREPARATION

TUBE SIZE — TUBER SIZE — DIE NO. — STOCK DIMENSIONS 22" x 3¼" x ⅛"
CUT TO WEIGHT 19-19½ oz. TYPE CUTTER MACHINE CLICKER — STOCK RECEPTACLE BOX
INSTRUCTIONS 1. SLAB ⅛" THICK AND 22" LONG
2. CONVEY ON LEAF-RACK TO CUTTING DEPT.
3. CUT 3¼" WIDE WITH MACHINE CUTTER
4. ROLL TO WEIGHT AND PLACE IN BOXES

FINISHING

CUT APART — HAND TRIM ✓ 650/HR. TUMBLE 525/HR. BUFF — PUNCH —
MACHINE TRIM — CARTONS, SIZE 16"x16"x16" PCS. 300
INSTRUCTIONS 1. CUT BLEED TITS WITH SCISSORS
2. TUMBLE ABOUT 60 WITH CHOPPED DRY ICE FROM 3 TO 4 MIN.
3. INSPECT; TRIM BY HAND IF NECESSARY.
4. PACK IN CARTONS, STRAP WITH WIRE.

• Complete instructions like these not only insure that the job will be done right, but sending a copy to the customer keeps him informed on the quality of work he will get.

A SIMPLIFIED cost keeping method that covers all manufacturing operations in detail without involving complicated mechanical recording and computing systems, and which virtually enables operating on a "cost plus" basis, has been developed by the Reeves Rubber Company of San Clemente, California. It has attracted considerable attention in the mechanical rubber industry, and has been adopted by a number of other companies.

In this plant of about 100 employees, the whole cost system is kept up by one girl, who also has time for stenographic work. She keeps the daily work sheet that constitutes the basic record, assembling all the needed information from production tickets and other sources. She also makes up the weekly recap sheet that is the key to cost control, and has it ready for inspection by Wednesday morning of the following week. Even with 250 employees, no additional clerical work would be required.

Because the system provides a constant and accurate check on costs, the Reeves organization has been able to set a fixed return for itself and at the same time share the profits on a 50-50 basis with its employees.

Of equal importance is the fact that it has enabled the company to get contracts revised upward if the cost figures show the jobs were taken too low, and also permitted voluntary revising the price downward if the net profit runs higher than the percentage which the company allows itself. Thus the company is virtually in the position of conducting its operations on a "cost plus" basis, yet at the same time maintaining its competitive position through accurate analysis of its costs.

As a means of segregating costs so that the profit-sharing bonus to the workers will be more directly in proportion to the efforts put forth in each department, the organization is subdivided into three separate companies which deal with each other as if entirely independent.

The first unit, Reeves Industries, buys crude rubber from brokers, and after master-batching the material sells it to Reeves Rubber. The latter manufactures the various extrusions and molded items which go to make up the list of Reeves contracts, such as automobile parts, pump impellers and vacuum cleaner parts, etc. Reeves Rubber pays the third unit, Air Weld, for special operations required for certain items such as cleaning, sand-blasting and cementing of metal inserts. Although the Reeves Industries and Reeves Rubber buildings adjoin, Air Weld is housed in a separate structure, far enough removed to protect the other units from the high fire hazard resulting from the nature of Air Weld's operations.

As a preliminary means of controlling costs, complete instructions for each detail of a job are issued on specification sheets.

Copies are forwarded to the supervisor of each department.

A copy of these instructions is also sent to the customer, to give him a picture of the various operations and inform him just what quality of work he is getting. For example, one order provides, among other things, that the operator performing a certain task must not wear gloves, because gloves prevent him from noticing when the material being processed has become too hot to give the best results.

As each order for a customer starts through the plant, it is given a job classification indicating the type of work to be performed, and a part number that completes the identification. These marks are also put on each operator's production ticket, and at the end of the day the supervisor picks up the ticket and records the number of pieces turned out. From the supervisor's report is posted the number of units produced each day and the man hours required.

Dollar Cost Per Piece

Dividing the total number of units produced by the man hours gives the dollar cost in labor per piece. Overtime is absorbed in the wage cost divisor. On the daily work sheet is also a column for the total direct labor unit cost for all the operations involved in the production of an item. At the end of the week, totals are footed up and analyzed to determine what improvements can be made.

Besides direct labor, the total direct unit cost must include material and scrap. The number of rejected units after inspection is noted on each operator's production ticket, and the rejected material goes into scrap. Then dividing the amount of scrap by the total material and direct labor cost gives the unit rejection cost, and adding material, direct labor and rejection cost together gives the total direct unit cost.

Material plus labor plus overhead constitute the total unit cost. A figure of 200 per cent of the direct cost is used for overhead. As figured in the Reeves set-up, overhead includes insurance(which is divided up between shifts), utilities, salaried workers, maintenance expense, sales expense, laboratory control, experimental work, trucking, shipping, packaging and everything else not covered by labor and material. If the number of shifts increases, this percentage may be reduced because the overhead is proportionately less.

Figuring the Profit

One of the reasons for setting the overhead percentage so high is the high maintenance costs involved in rubber goods manufacturing. Very heavy machinery is required and breakdowns are costly. In other industries where lighter equipment is sufficient and there are more assembly operations, overhead can be figured on a considerably lower basis.

A profit of 30 per cent is figured on operations, which works out to around 17 per cent net, varying according to the sales volume. If the records indicate that the profit is too low, the costs sheets are in such form that they can be shown to the customer, to inform him that the manufacturer will either have to cheapen the article or get more money for the job.

Since these cost figures can be reinforced by the copies of the manufacturing instructions that have been furnished to the customer, it is usually possible to convince him that an upward revision is necessary. As evidence of the good faith of the Reeves organization, examples also can be cited of voluntary downward revisions when the cost figures reveal that the profit is exceeding the alloted percentage.

Split With Employees

After the cost has been ascertained, a certain percentage of return to the investors on their capital is set aside, and another percentage for development expenses. After that, the remaining margin of profit is split 50-50 between the company and its employees.

For all its meticulous attention to detail, the Reeves Rubber Company is not located in the center of a big manufacturing area where such care would be most naturally expected. San Clemente is a tiny beach town half way between Los Angeles and San Diego, and aside from the Reeves establishment there is nothing remotely resembling industry in the place. The company is about ten years old, and was originally set up to perform manufacturing operations on the sole for the "wedgie" shoe, which Ray Reeves, the inventor, had previously contracted out. With the advent of the war, the company was called upon by the government to enlarge its operations, and since V-J Day it has been able to convert to peacetime operations with marked success.

—Courtesy Fruehauf Trailer Company

• Paraffine Companies cut unit costs at Emeryville, Calif., plant by synchronizing both the external and internal flow of material.

• Los Angeles warehouse of California Walnut Growers' Association where 25 sacks are palletized for loading into boxcars. Similarly pallets may be loaded on flatbed highway trucks or trailers by providing drive-in slots for trucks. In this way fork trucks will have access to the bed from both sides and can thus avoid the slow lift involved when fork trucks are on ground level with highway truck.

Money-Saving Opportunities in Receiving and Shipping

By W. R. POSTLEWAITE
Engineer
Standard Oil Company of California

(Last of a series of three articles)

WHEREVER it is feasible, sloping ramps should be avoided in a plant layout. If they must be employed for access from street level to an elevated warehouse or platform, they should not have a grade in excess of 10 per cent.

Steeper slopes unduly slow down the operation of industrial trucks, and furthermore such slopes reduce the permissible carrying load, particularly on the down runs where the tipping moment about the front axle is increased.

In the large Oakland Naval Base, in Oakland, California, where close to 1,000 warehouse fork trucks and tractors are employed, the sloping building ramps are said to be between 6 and 7 per cent.

Highway Truck Loading Docks

The placing of loaded pallets on highway trucks or trailers of the flatbed type may be very neatly handled by providing long drive-in slots within the elevated warehouse floor so that the fork trucks may have ready access to the bed from both sides. Most of such trucks can take two pallets wide and this arrangement avoids the slow lift that would be involved if the fork truck was down on the ground level with the highway truck.

The sides of the drive-in slots should have low safety curbs if the trucks must rapidly approach close to the pit edge, and the pit width should be proportioned for both a practical drive-in width, and yet the fork truck must be able to reach over and span the maximum open gap that will exist between the dock and the truck sides. Fork extensions may be used to good advantage here.

Enclosed van-type trucks, although they often have side doors, must usually be loaded into the rear end, and the 450° saw-tooth type of back-up dock at times is found to be an improvement where the available yard maneuvering space beyond the dock is somewhat limited.

The dock height must, of course, be suited to the type and height of trucks to be loaded or unloaded. With the conventional, large capacity, highway trucks and trailers, a dock height of about 4′4″ is evidently a good average. Beds of some modern trailers are about 56″ high. The adjustable magnesium plate type of drive-on wedges may serve in bringing low trucks up to a workable level.

Loading difficulty due to the wide range in truck body heights can be alleviated considerably by using the modern, readily portable, magnesium dock boards. By using these in long lengths, which may even space the rear of the truck three or more feet from the dock, the slope may be substantially reduced so that hand trucks can be used for loading. The layout of the yard maneuvering space could make allowance for this method where the traffic and the nature of the truck loading operation warrants using the extra yard space in this way.

Railroad Docks and Boxcars

Heights and widths of boxcar doors, as well as the heights of the car floors above the rails, varies over a wide range, and these variables can bear on the operation of materials handling equipment. To provide some working data covering these dimensions, pertinent measurements were made recently on 300 boxcars as they were delivered at random to one of our West Coast plants.

This survey indicated that the vertical opening of the average car door was 8′11.7″, with a range of 24″ below and 12″ above the average. However, 87 per cent of the car doors were eight feet high, or more, and evidently this dimension, with due allowance for the sloping dock board, may be used as a guide for usable truck height. Similarly the clear widths of the car door openings ranged from 5′0″ to an occasional extreme of 17′6″, but 93 per cent were six feet wide or more. This indicates that the dock board width should be about 5′6″.

Floor heights of railroad cars above the rails must be given due consideration in specifying the height of a railroad loading dock, since the difference in level between the cars and the dock is an important factor which may actually govern what warehouse equipment can be used to enter many of the cars, particularly if hand guided, powered, pallet trucks are to be used. The car survey mentioned above also showed that the average height of the car floors above the rails was 3'7.8", with an extreme variation of —6" and +7". However, 94 per cent of the car floors fell within plus or minus three inches of the average. (The American Railway Association standard boxcar floor height is understood to be 3'7¾", which corresponds closely with the average as noted here.)

Dock Plates

Portable dock plates often are not given much attention in the plant design, but they must be properly designed if they are to carry the concentrated heavy front wheel loads of modern fork trucks. They also should be proportioned to present a flat lip approach at both the dock and car ends over a wide range in car floor heights. If this condition is not satisfied, the expensive rubber tires on the trucks will suffer damage and the truck maintenance costs will increase.

In plants where the powered type of hand-guided fork trucks are suitable, their relatively small under-carriage clearance requires that the camber in the bridge plates be minimized. To this end the author's company has recently devised a simple ramp with a camber of but 1⅛" and which will accommodate a total car floor height range of 10" with proper end plate lip conditions. These plates have featured as a factor in the plant design since special locking channel was built into the dock edge to secure the bridge safely in position.

Incidentally, a rule which is understood to have proved satisfactory in practice for determining the working bridge plate clearance between the dock and the boxcars is as follows: C=x—65, where

C=clear space between dock and widest car in inches;

x=distance from dock edge to center of track in inches.

The stiffening members on the underneath side of the dock plate must not extend beyond the distance "C." That this formula is fairly reliable and covers the majority of cases was shown in the recent measurement of 273 boxcars taken at random as they entered the plant. The narrowest car width from sill of door to sill of door on the opposite side, was 9'1", and the widest was 11'3½". However, 96.7 per cent were between 9'4" and 10'4" wide.

While speaking of boxcars, it is worthwhile calling attention to an obvious, but easily overlooked fact, that is, these cars have doors on both sides. This feature can be very useful in an installation where there are a number of parallel spur tracks with loading docks between, and where it is desired to employ package conveyors as well as fork trucks to load all the cars. Alternately wide and narrow docks may then be provided for warehouse vehicles and conveyors respectively.

The Standard Oil Company of California's new warehouse at Richmond, California, is now being constructed in this way with 10 such four-car docks. The conveyors will deliver barrels into the cars, and then palletized loads of case goods will follow from the other side to complete the shipments. It will be noted that this plan avoids the mutual interference that would otherwise be inevitable between the two types of materials handling equipment where an attempt is made to use them both on a common dock.

In building designs involving fixed car door loading or unloading spots along a common track, the spacing of about 55 feet between doors should suffice for the nominal 50' size of boxcar.

Elevators

In the selection of freight elevators, the floor size, carrying capacity, and speed must be considered in determining the number of elevators needed to handle the required volume of materials through a multi-story building. Modern freight elevators are available which will easily take the concentrated wheel loads of large industrial powered trucks or other warehouse vehicles.

As a rule, it is not believed economical, however, to plan on carrying the industrial trucks from floor to floor on a steady schedule. Trucks on each floor should handle the traffic more effectively where the material volume is sufficient and the flow is reasonably steady.

Elevator speed is directly reflected in the initial cost of the installation, and the speed which is justified by the volume and type of vertical traffic may be determined on an economic comparative basis. In a busy plant the higher speeds, such as 150 to 200 lineal feet per minute, in the traction type of elevator drive may be warranted. The economy of providing complete automatic, remote push-button control and self-opening doors, without a steady manual operator, should also be investigated in selecting this important equipment.

Whenever materials are to be handled, there some business organization is either making or losing money, perhaps an amount large enough to mean the difference between profit or loss on the entire operations of the company. For that reason, "Western Industry" provides a continuous editorial service to its readers on materials handling developments and problems. The accompanying article is another of "Western Industry's" regular features on handling of materials.

Conveyors

Like most all complex material handling plans, mechanical conveyors in any sizable installation almost invariably involve so many ramifications and use factors that reach way back into the plant's functions, and into the practices and operating methods of various related departments, that the buyer must usually engineer his entire basic flow plan. This means developing fully the economic justification for the various portions of the system.

Package conveyor systems often must be integrated with other types of warehouse or plant facilities for material handling, and the plant layout engineer must analyze and establish the economic limits of the various kinds of equipment. This means properly weighing the daily and annual quantities of materials to be moved, and then determining by careful analysis where the conveyor should end, where fork trucks or tractors and trailers should serve, or where hand trucks or manual labor are the most appropriate. Fully automatic electrical conveyor controls, even though expensive, may be well justified at present labor costs.

There can be no uncertainty in the long time needs for an elaborate fixed conveyor system, since this equipment is relatively inflexible. If there is doubt on this point in a new operation, or if the quantity of material to be moved is not sufficiently steady, a borderline case might instead be handled to advantage by the fork truck and pallet system.

Special Features

All of these generalized studies should be completed prior to any conveyor design work by the conveyor supplier, who then brings his own special experience to bear on the material movements proposed for this type of equipment. In some instances special conveyor features must be jointly developed to enable the fork truck or other vehicles to remove packages or other objects directly from the conveyor, by means of scoop blades, wide forks, or other lifting devices.

Here, as in any new handling problems, care and a lot of patience are needed, since very insignificant features, if overlooked, can stall the whole plan. This is particularly true in a new installation where the identical operations may have not been undertaken before.

A feature of increasing importance in conveyor design, and which is pertinent in modern marketing trends, is the careful handling of painted or lithographed packages so as not to damage or mar their appearance. This becomes a significant mechanical problem where packages weigh 300 to 500 pounds, as occurs with filled oil drums, but the handling requirements can be met by proper design.

New Changes in California's Postwar Economy Revealed

By VAN BEUREN STANBERY
Area Development Representative
U. S. Department of Commerce, San Francisco

SOME significant and not generally recognized changes have occurred in California's economy, along with the unprecedented wartime and postwar expansions of population, employment, and business, that have lifted the state over former economic barriers into larger fields of opportunity.

They become apparent when a study of income statistics is made. California's per capita income no longer stands as high above the national level, but has graded down to a lower summit, although still substantially above the nation as a whole. This might seem an alarming trend, but for counterbalancing effects that may well tend to keep the state in a highly favorable position both industrially and commercially.

Three outstanding factors contribute to this change in the relation of California's economy to its population and to the national economy:

1. California's relatively greater increase in number of children under 15 years of age, virtually none of whom receive wages or income.
2. Wage levels elsewhere are catching up to those in California.
3. The nation's agricultural income is no longer as far behind California in relation to population.

High Income Attraction

From 1929 to 1943 California annually received about 40 per cent larger income payments in relation to population than the average for the Nation. In comparison with the number of mouths to be fed and persons to be clothed, housed, and provided with all the things people need, Californians had 40 per cent more dollars each year than the average for all Americans.

To many living in other parts of the country, California's 40 per cent higher than national per capita income spelled opportunities for making a better living than where they were. Along with the attraction of its climate, this inducement to move to California undoubtedly contributed to the continuous migration into the State. Carter Goodrich and others have demonstrated conclusively that migration flows from low to high income level areas.

While incomes have been greatly increased in all states since 1940, the nation's per capita income rose faster from 1944 to 1947 than per capita income in California. As a result, California's 40 per cent advantage in income level declined to 30 per cent in 1946, and to 24 per cent in 1947. For 1948, the state's per capita income may be only 20 to 22 per cent above that of the nation.

What Caused It

How did this happen? Statistics show that percentage gains in employment, payrolls, and production since 1940 have been much greater in California than in the nation and that the state's economic expansion has pretty well kept pace with its rapid population growth. Then, why has the national per capita income suddenly jumped up closer to the California level?

Although a variety of causes contributed to the decline in California's favorable income differential, the following three factors accounted for most of it.

One was the state's much greater than the national increase in children under age 15, practically none of whom are wage earners or receive independent incomes. According to the Census Bureau estimates, the number of children under age 15 in the United States increased 12.1 per cent from April, 1940, to April, 1947.[1/] In California, it is estimated that the number of such children increased more than 60 per cent during the same period.

Another factor was the relatively greater rise in wage rates and average annual earnings in the low income level areas, particularly in the south, than in states which already had high wage scales. Before the war, wage rates and earnings of California workers in most occupations averaged among the highest in the country.

While hourly wage rates and weekly earnings are now higher everywhere than before the war, they are more nearly uniform throughout the nation and earnings of workers in the low income areas are closer to those in California. This, of course, does not necessarily mean that California workers are worse off than they formerly were, but that average earnings have increased faster in the nation as a whole than in California.[2/]

The third major factor was the phenomenal rise in prices and volume of production of grains and livestock, which boosted agricultural income in the grain belt and cattle raising states to record heights. California's agricultural income also rose to new highs. But since agriculture produces a larger proportion of all income payments in the nation than in California, and because the state's non-farm population grew so much faster than the nation's non-farm population, the number of dollars contributed by agriculture to the per capita income of the whole population rose faster in the nation than in the state. While California agriculture still produced a few more income dollars in relation to population in 1947 than did agriculture nationally, the state's advantage in this respect was much smaller than in 1940.

Other contributing factors were the declines in gold mining and in motion picture production. In both these activities, employment in California is now below the level of 1940.

Steady Trend

The state's new and closer relationship to the national income level would not be of great importance to Californians if it promised to be temporary. Further examination, however, of the three principal causes of the state's new income relationship to the nation indicates that a substantial reversal of recent trends is not imminent.

California is sure to have a higher than prewar proportion of children under age 15 for several years, and unless its birth

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1/ Computed from data in Census Bureau Release, P-20, No. 9, Jan. 19, 1948.

2/ The increase from 1939 to 1947 in average annual wage and salary earnings of workers in all industries covered by State Unemployment Compensation Laws was 93 per cent in California, 97 per cent for the Nation and 122 per cent for the 11 southeastern states (based on date published by the Federal Security Agency).

• California may be running long on youth right now, which means heavier education expense, but youngsters like these, who are having their uncle, Wilbur Wade, show them how he checks a gas heater at Rheem's plant at Southgate, are big future assets.

rate drops sharply below the national birth rate, the present proportion of children may persist for a long time.

Moreover, it does not seem likely that wage rates and average earnings of California workers will increase faster in the near future than for workers in similar occupations and industries in other parts of the country.

Other Areas Catch Up

Agricultural income in the grain belt and cattle raising states may, of course, decline from present high levels. But it seems doubtful that California agriculture will soon again produce 25 per cent more than the national average income per capita of whole population as it did in 1940. Long range governmental policies and programs suggested for agriculture will probably tend to prevent agricultural income in the country as a whole from sagging down to its former low position in relation to income from other activities.

On the other hand, California's former 40 per cent higher than national per capita income was partly a statistical aberration. In April, 1940, the proportion of children under age 15 in California's population, 18.9 per cent, was one of the smallest of all the states. The national proportion in 1940 was 25 per cent.

Dividing total income payments in both the state and nation in 1940 by their respective populations age 15 and over in 1940 (instead of by the whole population) California's per capita income figures out only 31 per cent above the national average, instead of 40 per cent. Similar computations for 1947 show that California's per capita income in that year was approximately 20 per cent above the national per capita when based on population age 15 and over, instead of the 24 per cent computed for the whole population.

No Real Decline

So, while it looks as though California will not soon regain its former statistical position of 40 per cent above the nation in per capita income, the recent decline in this relationship is not altogether as serious as might appear from the published figures. California's increase in per capita income since 1940, when computed on the basis of the number of persons of working age (15 years and over) who are the actual income producers and receivers, has more nearly equalled the national increase. Rapid development of the state's natural resources and continued expansion of its agriculture, manufacturing, distribution, and service activities could maintain its present position above the national income level or possibly raise it by a few percentage points.

At the same time, in terms of the number of human beings, irrespective of age, to be fed, clothed, and housed, the income level of California will not be so much above the national level as it was before the war. The state's huge gain in children means relatively more total expenditures for their upbringing than before, and more taxes for schools, libraries, and other public facilities used by youngsters.

The tendency toward more nearly uniform wage rates and earnings throughout the nation has important implications for California.

For one thing, it may lessen the desire of workers in other parts of the country to move to California in hope of earning more money.

Manufacturing Benefit

For another, it may raise the cost of producing or distributing certain types of manufactured articles in other areas to the point where their production in California might become economical. And the rise in per capita incomes in the rest of the nation should tend to increase the number of vacationists and tourists who continually visit California and spend part of their incomes in the state.

THE LUBRICANT
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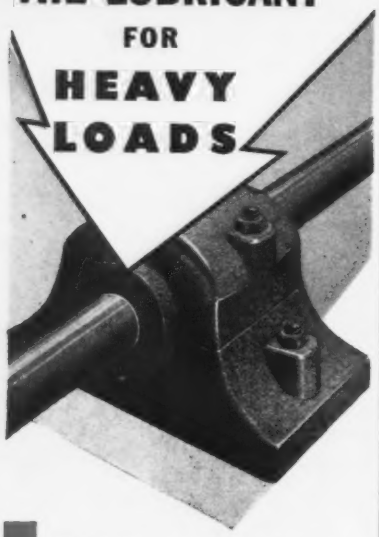
LOADS



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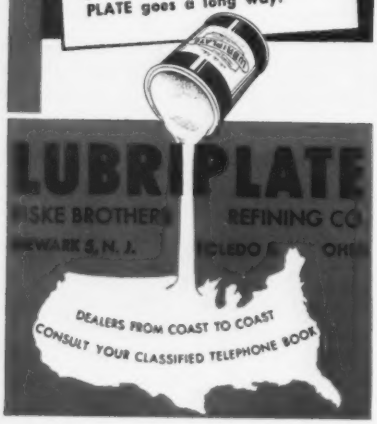

Industrial Groups Will Cooperate

By FRED B. ORTMAN, President
California Manufacturers Association
Chairman, California Conference of
Industrial Associations

STEPS towards unification of industrial groups in California, to create a more favorable "economic climate" for industries in this state, are under way through the recent formation of the California Conference of Industrial Associations.

Although in embryonic stage, this Conference is expected to lay the groundwork for coordinated efforts by participating associations representing important segments of California industry.

As of this writing, the following associations are participating in C.C.I.A.:

Aircraft Industries Association
California Associated Concrete Pipe Manufacturers
California Association of Ice Industries
California Fish Canners Association
California Manufacturers Association
Carbonated Beverages Manufacturers Association
Glass Containers Manufacturers Institute
Los Angeles Paint, Varnish & Lacquer Association
Manufacturers Association of South San Francisco
National Wooden Box Association, Pacific Division
Pacific Coast Clay Products Institute
Pacific Coast Garment Manufacturers Association
Southern California Rock Products Association

Other associations operating in California, with membership comprised of industrial concerns, and which are not devoted to labor relations matters, are invited to participate in this coordinating movement.

C.C.I.A., which held its initial meeting in San Francisco the early part of this year, has a well-defined purpose — which is set up in the "Agreement for Establishment" of the group as follows:

The Conference is established to:

(a) Provide a regular vehicle for meetings between representatives of industrial associations or groups operating in California at which matters of interest may be discussed for the information of all participants and views may be exchanged regarding such matters.

(b) Eliminate duplication of effort and develop coordination between groups having primary interest in each matter.

(c) Stimulate a broader understanding regarding matters affecting the industrial or economic welfare of California.

It is noted that the Conference is not an action body and, accordingly, does not bind its members to a definite policy—but provides for the necessary interchange of viewpoints on important problems mutually affecting manufacturers.

The Conference has agreed to limit itself to a selected list of subjects upon which it will concentrate its attention rather than dilute its strength by extending too far into various fields.

Important problems, involving phases of California industrial development, which are planned for the agenda of C.C.I.A. during the coming months include:

(a) Specific state legislation affecting industry (exchange and dissemination of information during the legislative session starting January, 1949).

(b) Industrial fuel, power and water—including coordination with CMA's Special Department in the interest of reasonable rates for natural gas, and studies concerning industrial fuel in this state.

(c) Compilation of accurate information on existing freight rate inequities in order that coordinated action may be exerted to reduce and stabilize freight rates for California industry.

(d) Continuous study of the burden of state taxation upon California industry—including aggressive efforts to remedy abuses and to improve the Unemployment Compensation system.

(e) Presentation of problems facing industry due to the recent Supreme Court decisions on multiple basing point pricing systems. Coordination of industry's viewpoints in conjunction with the work of the Advisory Council serving the Capehart Committee of the Senate.

(f) The effect of the current industrial mobilization program upon California industry.

It is apparent that this Conference may prove to be the springboard for concerted action regarding many other important phases of the state's industrial well-being as vital issues arise. With a nominal dues structure and with the restriction of membership primarily to industrial groups, it is expected that California industry will utilize this vehicle to the utmost extent.

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WESTERNERS AT WORK...

Arizona

Tony Trojanovich resigns as president and general manager of the Comstock Extension Mining Co., Inc., to take over position of mine superintendent for the company at Globe, Ariz. **Ted Robb**, Route 11, Box 496, Phoenix, is the newly-elected president.

California

Oil

H. T. Howe appointed assistant operating manager of General Petroleum Corporation for Northern California. Succeeded as superintendent at Parr Terminal, Oakland, by **G. A. Grant.**

Edwin D. Gray, assistant to general manager at Richmond refinery of Standard Oil Company of California, retires after 50 years with the company. **F. C. Boler** named manager of newly-created Office Buildings Department. Will handle operation of buildings in San Francisco, Los Angeles and Bakersfield. **C. W. Montgomery**, superintendent of transportation at Los Angeles, retires after 47 years of service.

Sidney Belither, who has been in charge of Shell's Pacific Coast operations since 1934, announces he will retire December 31. **P. E. Lakin**, who will move from New York to San Francisco, will succeed Belither. Mr. Lakin started with Shell on the Pacific Coast in 1915 and since 1942 has been in the head office in New York as vice-president in charge of marketing east of the Rockies.

Lumber

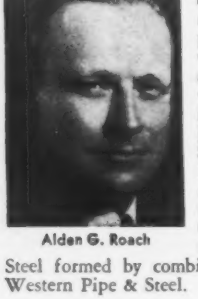
A. T. Hillman, formerly with Pickering Lumber Co., at Standard, Calif., becomes general superintendent Coastal Timber and Plywood Co., at Cloverdale.

Roland Carlson is president-manager and his brother, **Carl R.**, assistant manager of Industrial Plywood Co. plant at Willits.

G. R. Bleecker new v.p. and gen. mgr. Trinity National Lumber Corp., Fort Seward, Calif. Recently with Wisnom Lumber Co., San Mateo, before that resident mgr. Westfir Lumber Co., Westfir, Ore.

Steel

Alden G. Roach becomes president of Columbia Steel Company, succeeding **J. Lester Perry**, former Carnegie-Illinois president, who had been filling in at Columbia ever since the death of **W. A. Ross.** Perry remains in advisory capacity. Roach is a University of Illinois graduate, became associated with Union Iron Works in Los Angeles in 1928, joined Consolidated Steel Corporation in 1929, became its president in 1941. Will remain as president of Consolidated Western, the subsidiary of U. S. Steel formed by combining Consolidated and Western Pipe & Steel.



Alden G. Roach

Paul G. Mattern appointed manager of claims for Bethlehem Pacific Coast Steel Corp., San Francisco. Succeeds **Theodore Herman**, transferred to the operating department, Los Angeles plant.

Lewis W. Roe elevated from statistical supervisor to assistant comptroller in charge of costs and statistics for Columbia Steel Co. He attended Utah College and Stanford University.

Mark T. Anthony appointed assistant to **J. L. Ashby**, vice-president and general manager of Kaiser Company, Inc. Has been for the past three years in the cost and commercial planning division, Oakland. **Tudor A. Wall** becomes administrative assistant to Mr. Ashby.

Hubert Chappie appointed superintendent of the foundry at Torrance plant of The National Supply Company. He was superintendent of foundry for Columbia at Torrance.

Hubert Chappie

Dr. Robert B. Freeman appointed chief metallurgist for Columbia Steel Company, subsidiary of United States Steel Corporation, succeeding **Gordon L. von Planck,** appointed metallurgical consultant. **Thomas E. Caldwell** will succeed Dr. Freeman as works metallurgist at Pittsburg, and will be assisted by **H. Edward Doleman.**

Food

Roy L. Pratt

Roy L. Pratt elected president of California Packing Corporation, vice **Alfred W. Eames,** deceased. Has been vice-president, sales director and member of executive committee, also vice-president of Alaska Packers Association, Calpack subsidiary.

Byron Lesley appointed director of research and planning for Flotill Products, Inc., Stockton.

Public Relations

F. H. Eastman appointed public relations manager of the East Bay Municipal Utility District. He was formerly public relations and industrial management counsel for Aluminum Company of America and Parr Terminal and is a graduate of Stanford University.

Allison J. McNay, assistant supervisor of audio-visual aids in the Los Angeles School Department, appointed supervisor of a new education division in the public relations department of Standard Oil Company of California. Will direct development of petroleum educational material and will work with schools in the use of the Standard School Broadcast and Standard's motion picture service.

Earl S. Reynolds appointed director of public relations in southern California for Kaiser Company, Inc., with headquarters at Fontana. Has been manager of fleet sales in southern California for Kaiser-Frazer Corp.

Don Sweeney joins the public relations staff of the General Petroleum Corporation, northern California division.

Transportation

Harry Carlton Munson appointed assistant vice-president of operations of the Western Pacific Railroad Company, San Francisco. Has been assistant general manager of the Chicago, Milwaukee, St. Paul & Pacific Railroad at Chicago, and will become W. P. vice-president and general manager when **H. A. Mitchell** becomes company president January 1.

J. M. Vonau, Jr., appointed assistant to Vice-president **Claude E. Peterson** in the passenger traffic department of Southern Pacific Company, San Francisco. He has been general passenger agent in charge of rates and divisions. **Herman A. Nelson** appointed assistant to General Auditor **P. J. Kendall.** He succeeds **J. C. Jaspar,** promoted to executive assistant.

Manufacturing

General Electric Company joins the ranks of eastern firms appointing Westerners with announcement of the election of **George G. Montgomery** of San Francisco as a member of the board of directors at a meeting in New York City. Montgomery is vice-president and director of Castle & Cooke, Ltd., sugar factors and shipping agents.

L. R. Kessler is general manager of the newly-established Pacific Coast Division of Owens-Corning Fiberglas Corporation, and **W. C. Winterhalter** sales manager. Production is scheduled to start in the new Fiberglas plant in Santa Clara next July.

E. C. Bishop, president of the Bishop-Conklin Co., will manage that division of Devoe & Raynolds Co., Inc., on the staff of W. H. Mathews, executive vice-president of Devoe's over-all Trade Sales Division. Devoe & Raynolds recently announced purchase of the Los Angeles plant of Bishop-Conklin Paint Company.

Robert R. Miller, formerly executive vice-president in charge of sales for the Menasco Manufacturing Co., Burbank, has been appointed assistant to the president, Republic Aviation Corp., Farmingdale, L. I.

Malcolm Smith, New York investment broker, elected a vice-president of Hughes Tool Co., and will work closely with President Howard Hughes in supervising his widespread activities, which include Trans World Airlines, Hughes Aircraft Co., and RKO Radio Pictures.

L. R. Ballard appointed chief engineer of the Fruehauf Trailer Co., Los Angeles plant.

A. H. Behnke elected vice-president in charge of materials of Hotpoint, Inc., Ontario.

Abner Rosenfeld is president; **Will Rosenfeld** general manager, vice-president and treasurer; **W. A. Baker** general manager, stamping division, and **J. E. McKeever** production manager of the West Coast operation of Stor-All Corporation, Inglewood, who recently purchased the former plant of Forrest Furniture Co., Inglewood.

Dell Wolfington, formerly general foreman of maintenance, Solar Aircraft Corporation, San Diego, promoted to acting superintendent of manufacturing.

J. R. Nail, of Agricultural Chemical Products California Division, chosen manager of West Coast zone, headquarters, Oakland, for Sherwin-Williams Company.

Joseph L. Hegener

Joseph L. Hegener has been appointed secretary-treasurer of McCulloch Motors Corp., Los Angeles, manufacturers of chain saws, gasoline engines and gas heaters. He was formerly comptroller, and came to California in 1946 when McCulloch Motors moved West from Milwaukee.

Miscellaneous

C. Lloyd Thorpe, contributor of a number of articles to *Western Industry* on the control of production, and lecturer at the School of Management of Golden Gate College, San Francisco, is now associated with the Guy F. Atkinson Co., contractors and engineers. Mr. Thorpe previously had been associated with Dalmo Victor in various engineering, manufacturing and management assignments.

Evan Harris, member of the Cutter Laboratories, Berkeley, since 1946, named manager of General Accounting and Service Section. Harris, former Navy officer, has been supervisor in the section.

Gordon P. Larson has been named assistant director of the Los Angeles County Air Pollution Control District. He was formerly senior inspector.

F. J. Hood made president of Ansul Chemical Co., Modesto, as **Harvey J. Higley** is elevated to board chairman.

Education

Dr. Maurice Nelles, formerly of the War Production Board and deputy director of the Office of Production Research and Development during the war, named engineering and research manager of the U.S.C. College of Aeronautics at Santa Maria, with responsibility for technical and scientific management of research projects.

Oswald Nielsen, since 1943 controller and secretary-treasurer of the Lewis Bolt & Nut Co., Minneapolis, appointed associate professor of accounting in the Stanford Graduate School of Business.

Dr. Elizabeth Roboz, expert in food technology and agricultural chemistry, has joined the Food Research Laboratories at Stanford Research Institute. Has been at the Sugar Research Foundation at Cornell University. **Dr. Raymond H. Ewell** appointed chairman of Institute's department of chemistry and chemical engineering. Was formerly senior technologist in the economic research and development departments of Shell Chemical Corporation, San Francisco.

New members appointed to the Board of Governors of Golden Gate College, San Francisco, are **Stephen G. Herrick,** president, Herrick Iron Works, Oakland; **Richard Hilliard,** partner, Hilliard and Pickthall, Burlingame; **James Holbrook,** vice-president in charge of sales, the Paraffine Companies; **Lloyd D. Luckmann,** assistant to the president, City College of San Francisco; and **A. B. Tichenor,** director of industrial relations, Matson Navigation Co.

Nagel T. Miner chosen president of Golden Gate College, San Francisco; **Joseph M. Trickett** academic vice-president, and **Russell T. Sharpe** administrative vice-president. Mr. Trickett, who will continue as dean of the School of Management, was formerly director of organization planning for Columbia Steel Co.

(Continued on page 56)

MATERIAL HANDLING *News*

KRAFT

a BIGGER exhibit of BETTER machines TO DO MORE WORK AT LOWER COST

—the Third National Materials Handling Exposition

The 1949 Exposition will be held in Philadelphia January 10 through 14 and will constitute a broad view and preview of "industrial history in the making." It will be the most convincing demonstration of all time that the Science of Materials Handling is eternally new—that it is a never-ending process of evolving new and better methods and equipment to the end that our National economy can shake off the shackles of old, inefficient and time-consuming practices which have become prohibitively costly both in human energy and in dollars.

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Westerners At Work

(Continued from page 55)

Colorado

John W. Hill, who has been with United States Vanadium Corporation since 1936, appointed general superintendent of the corporation's operations at Uravan and Rifle. The administrative offices are at Grand Junction.

Fred W. Axtell named superintendent of cargo service for United Air Lines with headquarters Denver. He succeeds C. J. Rausch, who recently resigned. Mr. Axtell will direct cargo service activities over the company's entire system. He was formerly station service manager in Chicago.

C. H. Carlton, superintendent of the Ajax mine, Cripple Creek, before the war, has returned to that position to replace Earl Bebee, resigned.

Idaho

Carl E. Dorfler, assistant superintendent of Idaho division, Northern Pacific Railroad, becomes superintendent, succeeding Don S. Colby, retired.

Montana

Joseph T. Roy named superintendent of East Helena plant of American Smelting & Refining Co., succeeding O. P. Chisholm, retired. Frank C. Morgan is assistant superintendent.

Nevada

W. J. Henley of Virginia City named president and general manager of the Dayton Consolidated Mines Co., succeeding the late Homer L. Gibson. He has been secretary-treasurer and manager. A. N. Jacobson was elected secretary-treasurer. George D. Wick of Pittsburgh, Pa., was elected chairman of the board of directors.

Pierce Walker is the new mill superintendent for the Dayton Consolidated Mines Company at Gold Hill. Robert Kendall is junior engineer.

New Mexico

F. C. Green promoted to assistant manager of Chino Mines Division, Kennecott Copper Corporation, Hurley, N. M., advancing from general superintendent. He began with Kennecott in 1939 as mill superintendent at Hurley. Edward A. Schroer becomes mill superintendent succeeding Green.

Oregon

C. H. Watzek of Portland appointed treasurer Lumbermen's Industrial Relations Committee, vice Orville R. Miller, deceased.

Carl Jacobson named superintendent and gen. mgr. new factory of Southern Oregon Plywoods, Inc., at Grants Pass. Formerly superintendent Fir Manufacturing Co., Myrtle Creek, Oregon.

Howard Hevlin is superintendent of new Western Veneer Co. plant at Lebanon; also retains superintendency of Western's plant at Sweet Home.

Dale C. Prentice, member of the Bureau of Entomology and Plant Quarantine staff, heads the enlarged Western Pine Association's forestry services in the field of entomology, disease control and fire protection, with headquarters at Portland.

Ronald A. Johnson appointed assistant to Paul Brainard, head of the newly-created Engineering Standards Department at Portland plant of Hyster Co., manufacturers of industrial trucks and tractor tools. Has been with Hyster's Peoria factory approximately six years.

D. L. Hoffner, acting manager of the Portland mill of The Quaker Oats Co., directs Quaker feed business in the Northwest states. Robert R. Clark transfers from the company's Cedar Rapids, Iowa, plant as superintendent to take charge of milling and grain handling operations. W. F. Martin is manager of the mill's grain department.

Ivan Bloch, formerly chief of industrial and sources development for Bonneville Power Administration, and later special consultant to Secretary Krug on industrial development of the West and Alaska, organizes Ivan Bloch and Associates, with offices in the Park Bldg., Portland, to provide consulting service on Western industrial development factors.

Lansing W. Althof selected as resident engineer for Union Pacific Railroad, Portland, and Earl F. Kidder, Salt Lake City, appointed division engineer, Oregon, headquarters Portland.

Hilbert S. Johnson appointed general division manager, Portland General Electric Co., succeeding Fred G. Hodge, resigned. C. W. Brissenden appointed to succeed Johnson as assistant to vice-pres. in charge of operations.

Utah

Col. Graves M. McGary appointed manager of the Industrial division of the Ogden Chamber of Commerce. William F. Homer named assistant manager of the chamber.

Donald Newell appointed manager for the new steel tank operations at Provo, Utah, for the Keyes Tank & Supply Co., Casper, Wyo.

L. E. Snow is again with International Smelting & Refining Company as superintendent of their American Fork development project. He had been on leave as superintendent of the Copper Canyon mine.

Otto D. Donnell, former president of Ohio Oil Company and an organizer of Mountain Fuel Supply Co., Utah, announces his retirement from the board. C. Z. Hardwick, vice-president, fills the vacancy.

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Wyoming

Walter J. Johnson is the new president of the Sheridan-Wyoming Coal Company, with operations in Wyoming, succeeding **Paul L. Shields** who resigned to accept the presidency of three coal companies in Utah. Mr. Johnson was for some time general superintendent of the Bell & Zoller Coal and Mining Company of Illinois and was formerly associated with the Roundup Coal Co., Roundup, Mont. Mr. Shields now heads the Spring Canyon Coal Co., Royal Coal Co., and Standard Coal, Inc.

Washington

Victor Olson, president of the Bellingham (Wash.) Plywood Corp., and **J. W. Forrester,** general manager of the Coos Bay (Ore.) Lumber Co., appointed to the nine-man management committee of the Douglas Fir Plywood Association. **E. W. Daniels,** president of Harbor Plywood Corp., is committee chairman for the 11th consecutive year.

David Mayers, assistant superintendent of the rolling mill division at Trentwood, given six months' leave by the Kaiser organization to act as consultant for a new aluminum mill just opening in central France, headquarters Issoire. Has been with Kaiser since the Trentwood plant opened in 1946 and previously was with Aluminum Company of America.

Robert U. Haslanger assumes duties in Seattle as assistant to the general manager of the Western division of Monsanto Chemical Company. Becomes assistant general manager of Western division upon retirement March 1, 1949, of **H. P. Banks,** general manager. **Irving C. Smith** will succeed Banks.

Charles Kinghorn of Montreal joins The Permanente Metals Corporation to direct its new roll forming program at Trentwood mill, Spokane. Has been vice-president and chief engineer of Cresswell Roll Forming Co., Montreal.

Claude Kelley appointed papermill superintendent of Crown Zellerbach's Port Angeles, Wash., newsprint mill. Was formerly paper mill superintendent at Pacific Mills, Ltd., Ocean Falls, B. C. He succeeds **Charles Ackley,** transferred to similar position at Zellerbach's West Linn, Ore., papermill, succeeding **Jess Harris,** retired.

Theodore Schmidt assumes direction of public relations for Spokane and Tacoma plants of The Permanente Metals Corp. He succeeds **Howard Holmes,** transferred to an administrative post at the Newark, Ohio, aluminum rod and bar mill recently leased by Permanente.

William A. Tinney

William A. Tinney of Sedro-Woolley appointed forester on the staff of the Joint Committee on Forest Conservation, headquarters Seattle. Tinney will handle the Joint Committee's tree farm and general forestry program in Washington.

L. W. Bailey, electrical superintendent of Weyerhaeuser Timber Co.'s pulp division at Longview resigns to re-enter electrical contracting business in Kennewick. **C. B. Fahey,** formerly of Diamond Match Co., Ogdensburg, N.Y., and prior to that with the Aluminum Corp. of America, succeeds Bailey.

Perry Dale, formerly with Birds Eye-Snider, appointed superintendent of Burlington plant of Cascade Frozen Foods, Burlington, Wash.; **Jack Olp** is named superintendent of Kennewick plant, and **Gene McClain** appointed head of quality control for the three plants.

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West's Youthful Radio Plants Enjoy Big Backlog of Orders

Lusty television industry is giving the movies the jitters; Video sales exceed those for conventional radio equipment

LOS ANGELES — Important developments are in store for one of the West's youthful industries. Having just enjoyed a blessed event, the Western radio industry finds itself the proud parent of twins — a war baby and a peace baby— and at least one child, if not both, faces a dazzling feature.

The war baby, of course, is a growing backlog of military radio orders. The peace baby is television, a lusty, squalling infant which already has thoroughly disturbed the West's industrial family by precipitating a fit of jealous jitters on the part of an older child, the movie industry.

It was military radio that originally put the West on the radio manufacturing map. When the West Coast Electronics Association was formed, with one of its first tasks that of securing a share of post-Pearl Harbor war contracts, there were only three original members. Today the group numbers more than 50 companies, more than 30 of them operating plants in the Los Angeles area.

Radio always has been a feast-and-famine industry. When the war's end suddenly shut off the flow of government business, manufacturers swung immediately into such a spree of overproduction that the pent-up civilian demand swiftly melted away. Not even the advent of FM broadcasting was able to avert one of the traditional epidemics of price-cutting.

Backlog of $5,500,000

West Coast manufacturers, who have established a secure reputation with the armed forces, recently were assigned an important part in the current defense program. Hoffman, for instance, now is devoting 50 per cent of its production to military radio. Its activities in this field have risen from a $615,000 sales total last year, to a backlog now estimated at $5,500,000.

By comparison, the television twin is growing at an equally spectacular rate. Hoffman currently is turning out about 1,000 TV receivers per month, but its projected schedule calls for 5,000 in the first three months of 1949. This step-up is typical rather than outstanding. Admiral and Magnavox, who entered the television field within the past year, find that video revenues already have overtaken sales of conventional radio equipment. General Electric reportedly is expecting that in 1949 its TV sales will be nearly twice its returns from AM radio.

The sudden TV landslide resulted chiefly from two factors: (1) decision of the Federal Communications Commission against launching color television at this time, ending a controversy that had split the industry; and (2) cutting of the major financial knot that had tied up progress, through decision by the radio industry's biggest operators to absorb the multi-million-dollar losses prerequisite to establishment of nation-wide television broadcasting.

Television Stake High

This step has big implications for the West, for it meant a ground floor position for Hollywood, already the terminus of transcontinental networks and a primary reservoir of radio, movie, and technical talent. Significantly, the first transcontinental coaxial cable — essential at this stage of the art for network broadcasting — was aimed straight at Hollywood, center of the biggest concentration of population — and advertising revenues — in the West.

The financial paradox that had been keeping television cooped up in the laboratory was based on a chicken-and-the-egg question — which must come first, the television audience or the television broadcaster?

Getting started in television costs plenty of money. RCA sells a 5,000-watt transmitter for $85,000, its 500-watt model for $30,000. Associated equipment calls for another $80,000 or so, plus as much for buildings as the station thinks it can afford.

A quarter of a million is but a piker's stake, while network broadcasting calls for large stacks of blue chips. Line operating costs across the nation run $35 per mile for each eight-hour day. All this means that only big cities, with plenty of potential listeners — and advertisers — justify television service at these prices.

Awkwardly, advertising revenues can go up only as fast as audiences increase — yet people will not buy receivers until there are programs worth seeing. Sets still cost from $200 to $4,000, although the trend is downward. At the beginning of 1948 Los Angeles, with only one local station regularly on the air, had only about 15,000 receivers. By fall there were four stations in regular operation and three under construction, while the number of receivers in use already had doubled.

Soon all the video stations will move to a single colony atop 5,700-ft. Mount Wilson, where they are setting up joint power and water facilities. From this vantage point they can fan out their radiation to blanket most of the area from San Diego to Santa Barbara.

Major newspapers are forming tie-ups with TV stations — admittedly for publicity purposes — but the movie industry is beginning to entrench itself against what could be a serious competitor. It has been estimated that movie attendance drops off an average of 20 per cent when the family buys a television set. Paramount has been pioneering in the TV field for the past decade and is reportedly friendly to the idea that some day theaters may exhibit televised news reels and feature films to their audiences. This would be possible under a new process whereby the incoming TV program can be transferred to film and turned out dry, ready for projection, in a matter of a couple of minutes.

Critics Ask Variety

Contracts for video "short subjects" have been signed with small independent producers having experience in production of educational and industrial films. Most critics find present television shows crude and badly in need of variety, which they feel means full-scale theatrical performances with props, costumes, and actors.

In other words, the job is tailor-made for the motion picture industry, which also has the facilities for film recording, turning out a product ready for either theater or air showing.

(Continued on page 60)

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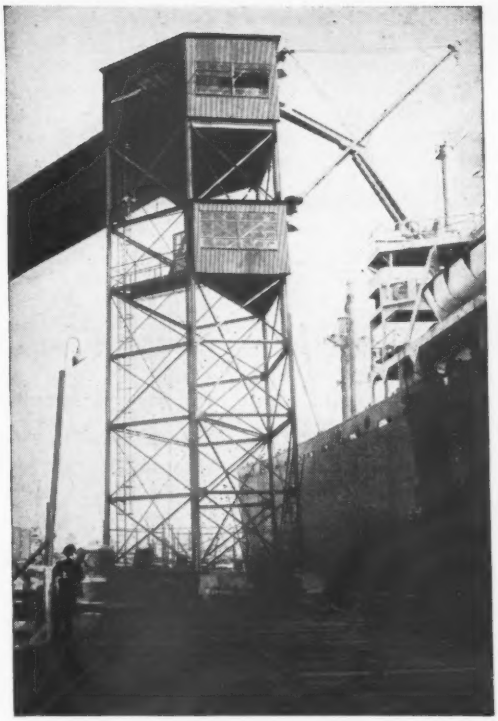
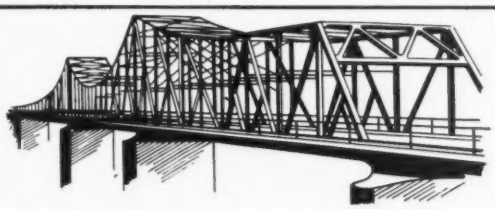
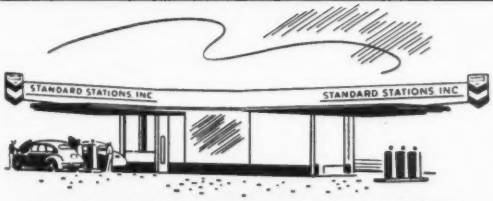




HIGHWAY AND RAILROAD GIRDER AND TRUSS BRIDGES



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INDEPENDENT IRON WORKS INC.

EIGHTH AND PINE STREETS — OAKLAND 7, CALIFORNIA

(Continued from page 58)

How soon will television spread over the entire West? Engineers rate this region as both fortunately and unfortunately situated in this respect. Its vast distances and sparse population limit the economic range of commercial TV broadcasting. On the other hand, its most populous areas lie in flat regions bordered by mountain ranges which are ideal vantage points whence to project the micro waves.

Perhaps the key to the situation lies in use of the repeater station, which automatically picks up a program radioed from a central studio and re-broadcasts it locally at amplified strength. A whole chain of small repeaters can be fed from a single major broadcast station, thus providing lateral feeders branching out from the major transcontinental or coast-wise cables.

Construction permits have been issued for TV stations in Riverside, San Diego, San Francisco, Stockton, Portland and Seattle, all of them expected to be in operation before the end of 1949. KDYL in Salt Lake City has been in commercial operation since last July.

It is yet a bit early for the repeater station to appear, but technicians feel it may be the means of bringing TV to the grass roots. At present costs, a TV repeater station means an investment of perhaps only $18,000, but the installation could easily become obsolete in six months at the present rapid pace of development. When the repeater phase begins, however, TV may spread with startling rapidity to smaller towns throughout the West. Almost overnight a new and major market will have been created for Western radio manufacturers.

This expansion is all the more important, in view of the fact that economists generally consider the U. S. market for the conventional radio sets to be near the saturation point. With 66 million radio sets in 37 million homes, nearly every family that wants one already has one.

TV is displaying some startling possibilities in promotion of goods whose major market lies among middle-bracket consumers. A Los Angeles department store placed a $75 spot announcement with a Local TV station and sold 42 tablecloths at $9.50, half of them via telephone orders received the same evening. A single announcement of a recipe book brought 700 requests.

A Hooper Survey showed that 60 per cent of those who had owned television sets three months or less were using them at the moment the checks were made. Sponsor identification was high — 80 per cent of the listeners to "We, the People," identified the show with Gulf Oil, as against 33 per cent for the AM radio version. At the present time, television audiences per receiver undoubtedly are abnormally large because so many sets are located in bars and other public places. Western industrialists in other lines may have to become familiar with the television field this year because of its merchandising possibilities.

Once in a while, some Big Operator from the east comes to look over this area's widely scattered clusters of industries, with their heavy emphasis on aircraft, oil, and the movies, and is insufferably kind, and patronizing, about it all.

Any local booster who may ever have felt a slight inferiority complex when comparisons are made with such mature manufacturing centers as Cleveland, Pittsburgh, and Detroit, now may put his hat back on his head and look such critics in the eye.

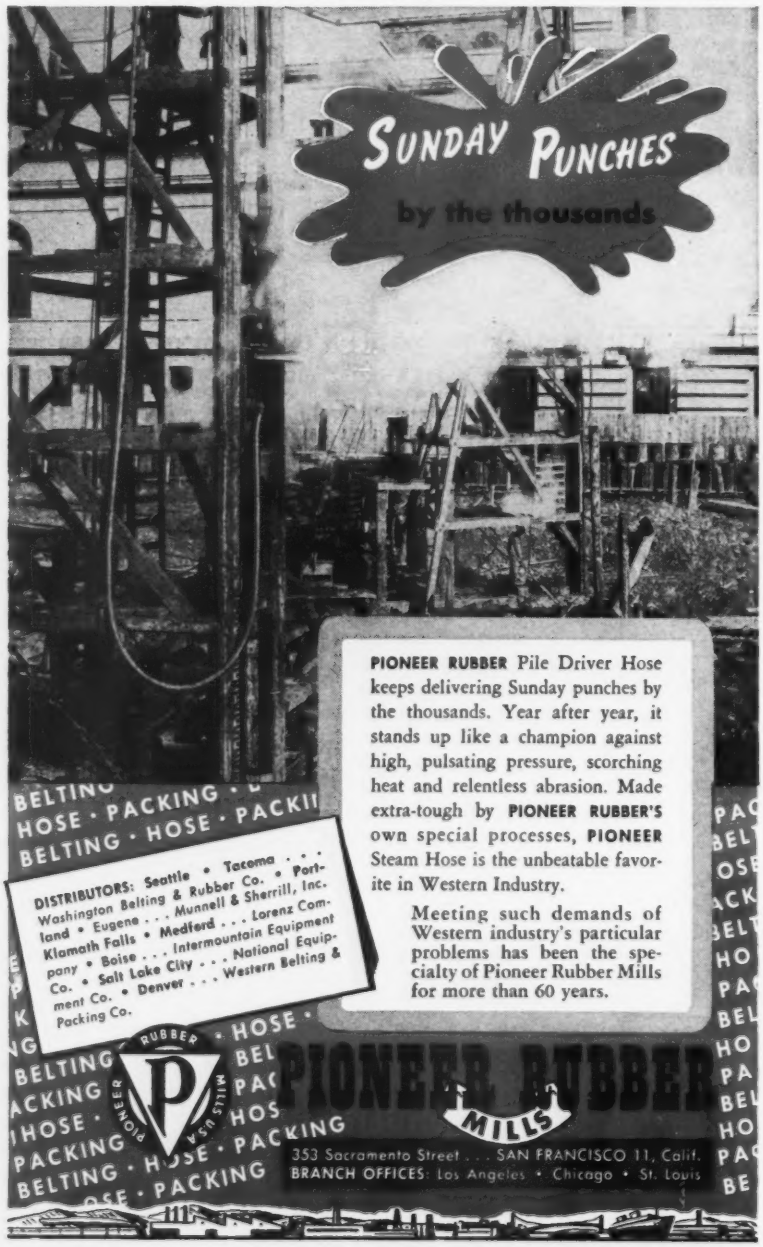
Not, of course, that existence of any such backward native sons has been officially reported, but a study just released by a leading economist puts this city on the nation's map as an industrial center which, if not actually a giant in stature, certainly is entitled to wear long pants.

Dr. Philip Neff, professionally impeccable analyst of the Haynes Foundation, has put its scientific calipers on the Los Angeles industrial area and rates it as follows:

Growth factor: Meteoric . . . its work force expanding 20-fold in 40 years. . . . Value of its manufacturing activity stepped up meanwhile by 7,500 per cent. . . . "The only area with which it can be compared

(Continued on page 92)

How Pioneer Rubber helps Western Industry...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Santa Clara County Attracts 60 Industries in Four Years

San Jose area becomes diversified manufacturing center; Geneva rate hearing ends; Bay growth totals $98,320,978

SAN FRANCISCO — Santa Clara County's stock-taking day on November 9 put the spotlight on big changes in this area that have come since 1940, with many more to come. No longer is San Jose a "cannery town" with dried fruit packing plants as trimmings, but a diversified manufacturing center with a big future ahead of it.

Back in 1940 Santa Clara County had a population of less than 175,000, but in 1947 there were 255,000 people in the area. The probable future population is projected as 270,000 for 1950, with 315,000 as a low estimate for 1960 and 350,000 for a high estimate. Its manufacturing employment increased from 8,600 in April, 1940, to 18,600 in January, 1948.

Special Conference

The occasion for the stock-taking was a conference on industry, trade and public service held at the University of Santa Clara, sponsored by the colleges of business administration and engineering of the university, the San Jose Chamber of Commerce and the two San Jose newspapers. A statistical and analytical picture drawn in a new booklet "Santa Clara County: Its Prospects of Prosperity" served as the springboard for most of the discussion. The booklet is a digest of a report prepared by the Industrial Survey Associates of San Francisco, of which Stuart P. Walsh is the director, with the assistance of the U. S. Department of Commerce and the state Office of Planning and Research.

At the same time, the meeting served as an opportunity to review the success of a national advertising campaign to attract industry to the San Jose area. Sixty new industries have been added in the last four years, of which about 40 are "market centered," a dozen are "raw material centered" (mostly more food products and cement) and the remainder fall in the foot-loose category. Much effort has been spent in attracting new branch plants of national or regional companies.

The tone of the conference indicated that smaller cities may have considerable success in attracting to their localities business that has heretofore been concentrated in big metropolitan centers, but is now finding that the inconvenience of the large cities outweigh their advantages. The paperwork for insurance companies, for example, can be carried on efficiently in smaller centers, it was pointed out by Russell Pettit, manager of the San Jose Chamber of Commerce.

San Jose's growth means that the equivalent of a whole new city has been added, according to Thomas L. Mitchell, San Jose realtor, more than the entire neighboring cities of Palo Alto, Sunnyvale, Los Gatos and Gilroy, and that for future requirements 4,500 dwelling units a year will be needed to keep abreast of the growth.

Industrial property meanwhile has gone up from $1,000 an acre to $5,000 and $6,000, it was reported by F. B. Stratton, industrial commissioner for the Western Pacific. This increase, however, includes the development cost. In zoning industrial property two mistakes are frequent, he said. First, zoning too small an amount, with the result that the price of the land becomes too high, and second, discovering too late that some of the area included is not for sale.

Rate Hearing Concluded

Testimony in the ICC hearings to determine whether the reduced rate on steel from the Geneva mill to Pacific Coast points first put in effect in wartime should be made permanent was concluded at hearings held in San Francisco late in October, and briefs will be submitted by the interested parties in January, 1949. A decision may be handed down later in the year.

An impressive array of witnesses appeared in behalf of the lower rates sought by U. S. Steel Corporation, including many steel users from Utah, California and the Pacific Northwest, who stressed the advantages to them. Dr. J. R. Mahoney of the University of Utah Bureau of Business and Economic Research testified that Geneva was dependent on large volume and diversity of products, which would be hindered by a higher freight level. Steel users included K. T. Norris of Norris Stamping & Manufacturing, Los Angeles; A. C. Gerlinger, general manager of the Salem Steel Fabricating Company of Salem, Oregon; James W. Silver, president of the Ogden Iron Works, and F. E. Scheffner, assistant general manager of the Lang Company, Salt Lake. Opposing the rate reduction were the Kaiser, SF&I, Sheffield and other competing steel companies, with the Sheffield attorney doing most of the attacking.

Industrial Growth

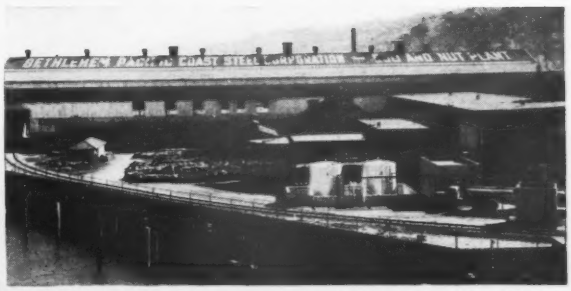
Total industrial development in the San Francisco Bay area for 1947 reached a grand total value of $98,320,978 capital investment, representing a combined total of 596 new plants and expansions in the nine Bay counties, the San Francisco Bay Area Council reports. This comprises 354 new plants with a capital investment of $40,248,800, and 242 expansions of $58,072,178. Food and kindred products ranked first, with iron, steel and related products second, and chemicals and electric machinery following.

Although the Dickey committee of the state legislature has been giving the whole question of water pollution a complete survey in hearings that have covered nearly a year of time, some groups have become impatient and induced the district attorney of San Joaquin County to file an injunction at Stockton to stop the city of Stockton, six canneries and a sugar refinery from allowing seepage, factory waste, organic matter and other substances to get into the San Joaquin River. Sportsmen in particular are reported backing the move. Subsequently it was discovered that the refinery seemed to have been included by mistake.

The American Warehousemen's Association's 58th annual meeting will be held in San Francisco February 7-10, 1949, according to Harlan J. Nissen, Los Angeles, AWA president. The National Association of Refrigerated Warehouses, Inc., the AWA Merchandise Division, and the Refrigeration Research Foundation also will meet.

NEW BOLT AND NUT PLANT FOR THE NORTHWEST

General view of Bethlehem Pacific's new bolt-and-nut plant at Seattle. This modern 80 ft by 415 ft building was designed expressly for the purpose.



Interior view of the plant showing production-line arrangement of bolt-and-nut machinery. All of this equipment is painted in a dynamic color scheme.

The completion of Bethlehem Pacific's new bolt-and-nut plant at Seattle marks a major milestone in this company's expansion program.

Replacing an older plant at the same location, the new bolt-and-nut plant embodies the latest technical developments and manufacturing methods.

A new building was designed and constructed for the purpose. Modern automatic machines have been arranged in high-speed production lines. All of the interior equipment has been painted in a dynamic color scheme to increase efficiency and improve safety. The plant is now capable of turning out a wider range of top-quality bolts, nuts, and fastening specialties for jobbers and manufacturers throughout the Pacific Northwest.

In addition, Bethlehem Pacific also manufactures fastenings at South San Francisco and Los Angeles. The bolt-and-nut plants at these three industrial centers are tied in and coordinated with Bethlehem Pacific's integrated steel mills at the same locations.

BETHLEHEM PACIFIC COAST STEEL CORPORATION

Sales Offices: San Francisco, Los Angeles, Portland, Seattle, Honolulu

Steel Plants: South San Francisco, Los Angeles, Seattle

BETHLEHEM PACIFIC

★ BETHLEHEM STEEL ★

Smaller Manufacturers Assert Right to Speak for Themselves

Resent claimed dictation by big business spokesmen; Basing point case discussed; Oil business doing fine

DENVER — Smaller manufacturers and other independent businessmen are standing up on their hindlegs and challenging the right of big business to speak for them. This newsworthy development, perceptible before the general election and much more pronounced since, may have a pronounced effect on Western industrial development in the years immediately ahead.

Expressing resentment against the dictation they claim has come from organizations controlled by a handful of supergoliath industrial and financial organizations, the independent industrialists are insisting that spokesmen for "business" ought to identify themselves and state plainly who called the tune they are playing.

This came up in the election and its morning-after bull sessions, when many independent businessmen seemed surprisingly cheerful over the outcome. Their chief worry was that a lot of the important Democrats re-elected or swept into office might have the mistaken notion that "business" opposition to Democrats was unanimous and uniform. If so, there might be a tendency on the part of the government to "get even" with businessmen generally, rather than discriminating only against those who had been opposed to the Democrats. Generalizations ought to be avoided, of course, even the generalization that "big business" opposed the Democrats, for of course several operations of the biggest businesses in the world grew and prospered fantastically during the era of the New Deal.

Basing-point Jitters

The widening cleavage between independent business and big business was notably present in Denver when the Manufacturer's Association of Colorado and the Denver Chamber of Commerce put on a program attended by some 400 manufacturers and other industrialists. The topic for discussion was the crisis presented by the need in many industrial fields for new pricing methods after the "cement case" had put legal taboos on many basing point equalizations and "systematic" freight rate absorption.

The meeting was one organized at the behest of the Capehart subcommittee of the Senate's commerce committee, to get industrialists talking about the upheaval caused by the Supreme Court decision in the cement case. Obviously, it was hoped that the result of such talk would be a rising clamor for legislation to restore the *status quo ante bellum,* or simply to give business a Congressional blessing and assurance that it could stop worrying and go back to the old way under which American industry became the marvel of the world.

Some small manufacturers injected a surprising note when they stood up and said they hated to seem out of order but that they were darn glad the old way had been changed and they were better off now than before, particularly since the price they pay for steel now is less than it used to be, due to the changed way of pricing. Before anybody could do anything about it, the idea spread that maybe "business" has really divergent views in the matter, and that the biggest businesses hadn't better undertake to speak for industry in general unless they are looking for trouble.

The people who staged the big meeting were asked, during the question-and-answer period, "Did you undertake to obtain a well-qualified speaker to present the case *for* the Supreme Court's new policy, upholding the Federal Trade Commission?" The answer was a very lame assurance that anybody was welcome to ask a question from the floor, after the speakers had presented their case. This one-sided presentation of the matter didn't tend to heal the growing breach between independent businessmen and those who are in the largest companies. The speakers on the program were Frank A. Kemp, president of the Great Western Sugar Company, and Chris Dobbins, executive vice-president and general manager of the Ideal Cement Company. B. C. Essig, vice-president of the the Gardner-Denver Company (rock drills, pumps, etc.) and president of the Denver Chamber of Commerce, presided at the important session. Everyone was urged to fill in a questionnaire, evidently prepared by the Capehart committee, and one of the speakers made it pretty clear that anybody so "confused" as to express himself in favor of the Supreme Court position would be a traitor to business and ought to have his head examined.

Oil Business? Doing Fine.

Continental Oil Company, bellwether of the petroleum industry in the mountain and prairie states, chalked up net profits of $12,935,334 in the third quarter of 1948 which amounts to a gain of about 25 per cent over the same period in 1947. In every category the company's position improved. Production of oil was up, plant expansion increased, refinery runs showed a substantial jump, dividends increased from $1.75 to $2.50 a share for the first nine months of the year, and net profits per share advanced from $5.24 to $8.68. This handsome record is not unlike those of various other operators in the Rocky Mountain region.

CRDC Ailing?

Starvation or lack of spondulicks is threatening the life of the bravely-launched Colorado Resources Development Council. The Governor's Committee, as it still is called, although the Governor who called it originally is gone and forgotten, has made a good start and assembled a staff. Some interesting information has been put out, to help outside industrialists find Colorado raw materials and other resources worth developing. The Council has helped numerous Colorado people to find capital and to solve other problems that held back the state's industrial development. But before this report appears in print, the committee that stands back of the CRDC will meet in the State Capitol at Denver to decide whether to give it a decent burial and call the whole thing quits. The alternative is for industry to shoulder the responsibility and put up the money to keep the agency going. Governor Lee Knous, re-elected and with his own party now in

(Continued on page 66)

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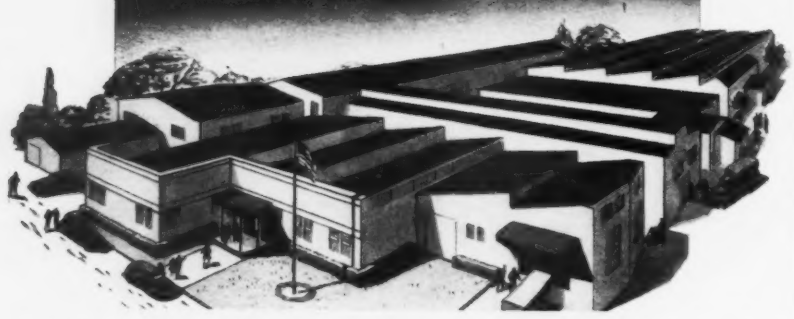

Offices in Principal Western Cities Branch and Warehouse in San Francisco

(Continued from page 64)

complete control at the statehouse, may solve the problem by getting state funds to pay for most of CRDC's staff. Even so, industry probably will be asked to hold up its end, which ought to be the biggest end. If you aren't on the mailing list to get the CRDC reports and its monthly publication, correct that lack by writing to the Colorado Resources Development Council, Inc., 301 Kittredge Building, Denver 2, Colo. The material is sent out free, and much of it is excellent.

Steel Mill Blues

More and more talk is heard on the sunny side of the Rocky Mountain region about the chances of getting a rolling mill in the Pueblo area, where rods, rails and wire is produced at present by the Colorado Fuel & Iron Company.

Word that Columbia Steel, a U. S. Steel subsidiary, has a new $25,000,000 sheet and tin-plate plant in California at Pittsburg, has caused some of Colorado's businessmen to say, "Only twenty-five million. We were told it would take many times that."

While even $25,000,000 isn't available just anywhere, even these days, the sentiment in Colorado seems to be that this idea of a new mill to roll sheet steel isn't beyond the realms of probability. If the Colorado Fuel & Iron Corporation is a bit short just now, perhaps others in the area might help out. And the chance is improving that the idea may please founders of a new steel company, or one of the other present operators; either might look with favor upon the Rocky Mountain region, which has interesting potentialities—particularly with decentralization now indicated as the nation's prime responsibility in the years ahead.

Better Brains

The ill-kept secrecy that is supposed to surround the weekly tipsheet issued in Denver under the name "Cervi News Letter" was lifted recently when Gene Cervi took it upon himself to let the whole world know some facts about the Rocky Mountain area.

For a long time industrialists have recorded higher man-hour production and greater resourcefulness (adaptability) among mountain states workers, but now comes Mr. Cervi with word that "Colorado leads the 48 states as the birthplace of the nation's leading scientists . . . Colorado stands eighth among the states as the birthplace of men and women who are listed in Who's Who . . . and other Western states have produced more than their proportionate share of the country's leaders."

If you want to get a whole bagful of significant points adding up to a great future for the Rocky Mountain region, write for a copy of the Cervi News Letter, No. 163. Address: Railway Exchange Building, Denver 2, Colo.

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Power and Flood Control Big Topics in Northwest

Army engineers propose $3,000,000,000 multi-purpose Columbia River project; Water diversion study begun

PACIFIC NORTHWEST—There will be plenty for this area to chew on in the months to come over the pressing questions of electric power shortage and flood control. Three developments in the last month which will contribute to the topics for discussion are as follows:

(1) The Army Engineers have announced their program for a $3,000,000,000 control plan for the Columbia River and its tributaries, which follows an earlier report from the Bureau of Reclamation setting forth its ideas of what should be done. In the end both of them probably will get together and reconcile their differences, just as was done in the case of the Pick-Sloan plan for the Missouri Valley.

(2) Central headquarters have been set up at Salt Lake City for the Reclamation Bureau's grandiose "United Western Reconnaissance," which calls for a study of the possibility of diverting water from the Columbia basin to points further south (southern California papers please copy). J. Stuart Myers, formerly with the Army Engineers in the Canal Zone, has been appointed assistant chief engineer of the reconnaissance.

(3) A generating corporation has been proposed, in which private power companies, municipal hydro plants and public utility districts could pool funds for construction of new plants, thus hastening the day when the power shortage could be relieved.

Flood Protection Seen

The Army Engineers plan assures positive protection against major damage from floods in the Columbia River basin, according to Col. Theron D. Weaver, North Pacific Division Engineer, but is thoroughly multiple-purpose and not a flood control or power plan alone. The Reclamation Bureau's Hungry Horse and Grand Coulee projects, as a result of cooperative investigations, have been planned for use as fully effective component parts of flood control as well as of power and irrigation plans, he says, and a future flood would not interfere with power production as was the case in the 1948 flood.

The Army Engineers' "Main Control" plan calls for: (a) Immediate authorization of the following multiple-purpose dams and reservoirs in the interest of flood control, navigation, power and other water uses:

(1) Libby Project, Kootenai River, Montana
(2) Albeni Falls Project, Pend Oreille River, Idaho
(3) Priest Rapids Project, Columbia River, Washington
(4) Hells Canyon Project, Snake River, Oregon and Idaho
(5) John Day Project, Columbia River, Oregon and Washington
(6) The Dalles Project, Columbia River, Oregon and Washington
(7) In addition to the above, the Glacier View Project on Flathead River, Montana, is included for consideration pending the concurrence of the Secretary of the Interior, with a view to its definite recommendation at such time as the Secretary of the Interior may concur. Should its construction not be authorized after reasonable consideration, further study of feasible alternates will be made.

(b) Modification of the authorization for Grand Coulee Dam, with the general concurrence of the Bureau of Reclamation, in the interest of flood control to provide for increase in outlet capacity and reservation of 5,120,000 acre-feet of storage for the joint use of flood control, irrigation, and power.

(c) Adoption of specific procedures relating to the most effective operation of the Grand Coulee and Hungry Horse Projects of the Bureau of Reclamation as a part of the Main Control Plan.

(d) Modification of existing levees, construction of new levees, and provisions of certain bank protection, to supplement the flood control provided by storage in the recommended reservoirs for the protection of valuable lands along the lower Columbia River, subject to the provision that local interests comply with the requirements of cooperation specified in the Flood Control Act of 1936, as amended.

(e) Open - river navigation improvements on Snake River, from Lewiston, Idaho, to Lime Point, Idaho, a distance of 30 miles, and the construction of certain approach channels and turning basins on both the Columbia and Snake Rivers, subject to certain requirements of local cooperation.

The Army Engineers already have recommended a modified Willamette Valley project providing for 20 multi-purpose reservoirs, five of which are already complete or under construction.

Regarding the "United Western Reconnaissance," Commissioner Michael Strauss of the Bureau of Reclamation said in a recent administrative instruction:

"This reconnaissance investigation is to ascertain and to report to Congress whether the bureau should explore further the possibility of bringing water from the Columbia River basin or elsewhere by diversion, transfer or other means into the Southwest, which is so deficient in water supply."

Plant Bids Rejected

War Assets Administration has rejected both bids received for the Willamette wood chemical plant at Springfield, Oregon.

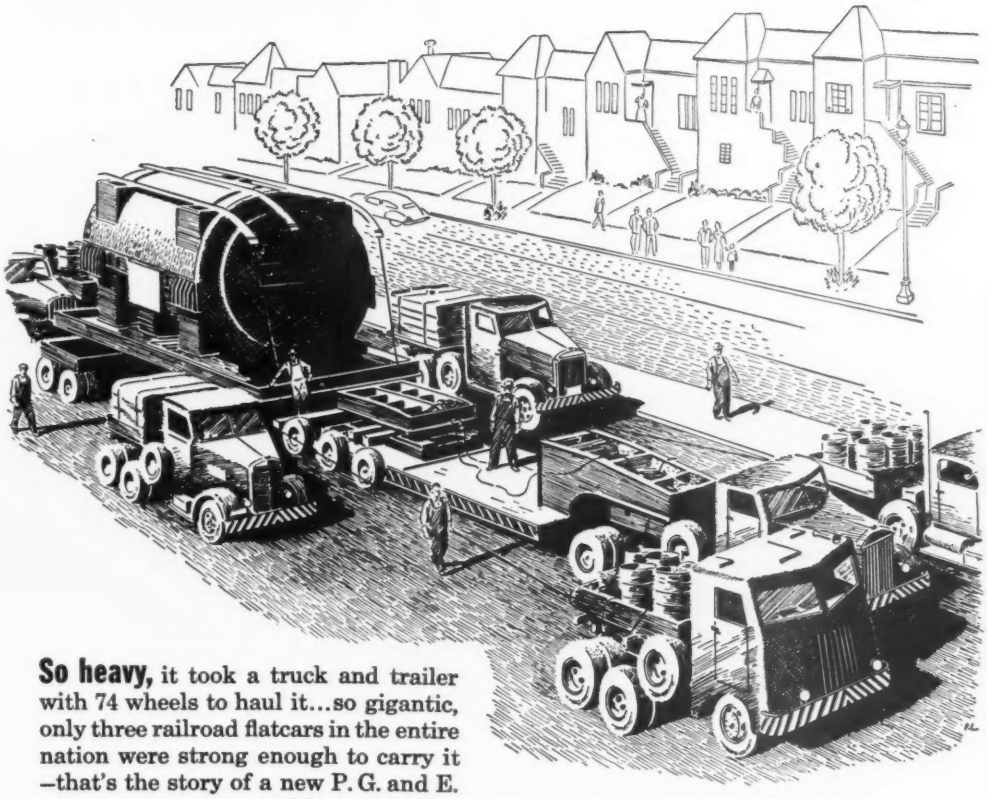
WAA said the offer of the Waste Wood Chemical company of Milwaukee, Wis., for a five-year lease with an option to buy for $1,200,000 had too many conditions attached, while the offer of the Leach Brothers Company of Chicago to buy the plant outright for $51,000 was entirely too low.

The plant cost an estimated $3,000,000 to construct and WAA and the forest service have estimated that some $500,000 in new capital is needed to make necessary revisions and get the plant into operation.

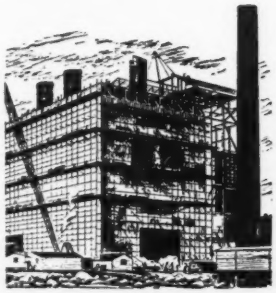
A contract for supplying 275,000 tons of iron ore to Japan has been awarded by the Japanese Board of Trade to Barclay & Co., Inc., Seattle importers and exporters. The ore will be obtained in Brazil, and the cost of it delivered in Japan will be approximately $6,000,000.

Net revenue from the sale of Bonneville and Grand Coulee power for the fiscal year ended July 30, last, was $9,136,181 after all operating expenses, maintenance, interest and depreciation were paid.

A Giant Freight Load for New P. G. and E. Power



So heavy, it took a truck and trailer with 74 wheels to haul it...so gigantic, only three railroad flatcars in the entire nation were strong enough to carry it —that's the story of a new P. G. and E. generator armature which soon will be helping turn out 149,000 electrical horsepower for Northern and Central California. One of the biggest ever built, this armature weighs 356,000 pounds (178 tons) and is 24 feet long, 12½ feet high. You see it here on the last leg of a 3,000-mile journey from the East.



Its destination was P. G. and E.'s Station "P" at Hunters Point in San Francisco, now being expanded to a capacity of 360,000 horsepower as just part of America's biggest power building program.

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REGIONAL REVIEWS

THE WASATCH FRONT

Oil Hunt in Utah Producing Results

SALT LAKE CITY—Discovery of oil in commercial quantities at three widely separated points in Utah has given an added "lift" to the exploration boom in this area. The wells brought in are all small but independent wildcatters and major petroleum companies are betting millions of dollars that larger strikes are in the offing.

The three wells brought in are located near Vernal in the Uintah basin, the Escalante area in Garfield county and near Monticello in San Juan county.

Between 35 and 40 companies are currently engaged in exploration work in the state. Ten major companies are drilling in a dozen different counties and nine more are obligated to start drilling within a year.

Generally, the oil hunt in Utah is being conducted by exploration subsidiaries and departments of major oil companies and well-financed independents.

Meanwhile Standard Oil Company of California is rushing to completion a $10,000,000 refinery and pipeline project started last spring. The refinery is located in North Salt Lake and the pipeline runs from the Rangely field in Colorado to the refinery, bisecting much of the Utah area where the exploration is most intensive. The investment in the new refinery and transportation facilities is predicated partly upon the known supply of crude in the Rangely field and partly on the expectation that additional supplies will be found in southeastern Utah.

Aqueduct Work Let

Award of a contract for the last five miles of the 42-mile aqueduct from the Deer Creek reservoir in Provo canyon to Salt Lake City, was welcome news to residents of the metropolitan Salt Lake area. The city has been sitting on a "hot seat" for the past few years, waiting for one of its periodic drouths and wondering what would happen if one struck before the prewar water supply was augmented by Deer Creek water. Consumptive demand has increased enormously during the past ten years and nothing has been added to the supply since the drouth period of the early thirties.

The Deer Creek, or Provo River project, was started by the U. S. Reclamation Bureau in 1937, when the memory of water shortages was fresh. First the war intervened by making materials and manpower unavailable for the project. And when the war ended costs were so sky-high that the city's debt limit prevented the awarding of contracts. A plan was worked out with the Reclamation Bureau to technically by-pass the debt limit, thereby making a resumption of work possible.

Drought Protection

Completion of the aqueduct will give Salt Lake City some protection against a drought but full utilization of the project is dependent upon the Duchesne tunnel, which will divert water from the Colorado River basin into the Great Salt Lake basin. This part of the project was about one-third completed before the war but high costs have prevented anything being done on it since. The last bid of $4,500,000 was so far in excess of Reclamation Bureau estimates that it was forthwith rejected.

About one-third of the water for the project will be diverted through the tunnel when it is completed.

The area's water problem, however, will not be solved by the bringing in of Deer Creek water alone. The city will have to have a new distribution reservoir, which it is trying to get the Reclamation Bureau to finance. Another eventual necessity is a multi-million dollar filtration plant.

New Oil Exploration Method Developed

An increase in much needed oil supplies is foreseen in the development by Dr. Thomas C. Poulter, associate director of Stanford Research Institute, Palo Alto, of a new method of seismic oil exploration.

Dr. Poulter's method employs a pattern of small, specially-shaped charges of explosive compositions which are detonated above ground instead of the firing of a single, large charge in a shot hole at various depths beneath the surface as in conventional methods.

Dr. Harold Vagtborg, president of the Institute of Inventive Research, San Antonio, Texas, under whose sponsorship the work was carried out, said the research is not yet completed but that results so far indicate the method may increase supplies by providing a faster, more economical means of exploration.

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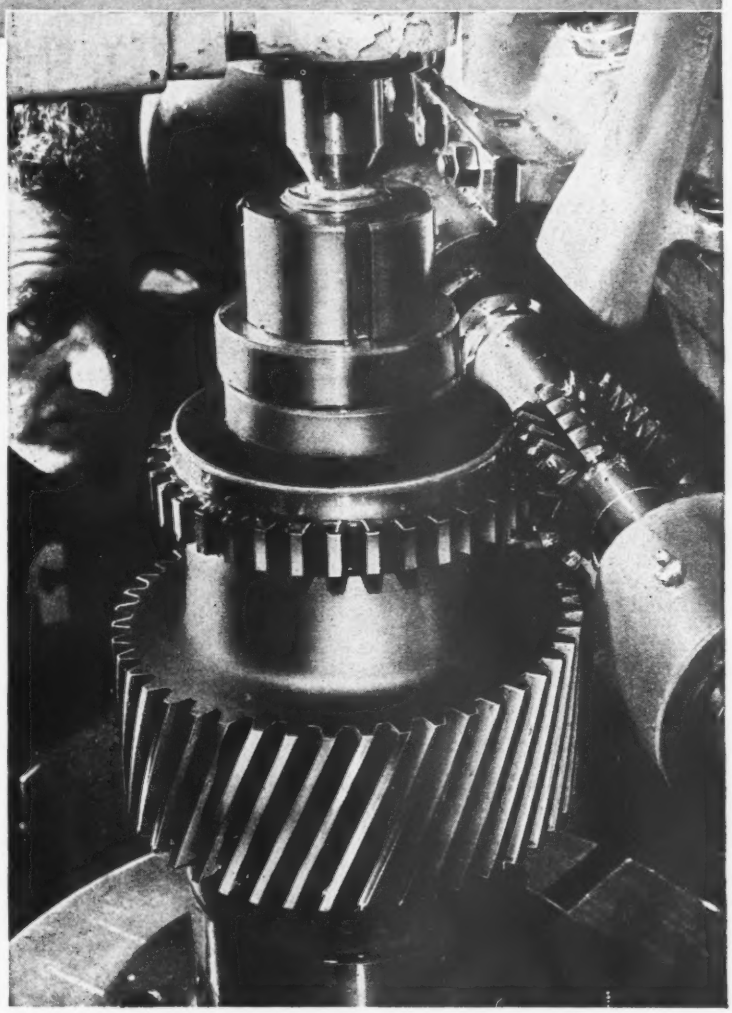

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Why Westerners Want Multiple Bargaining

By ALMON E. ROTH
President, San Francisco Employers Council

Digested from a memorandum submitted by Mr. Roth currently to the Labor Relations Committee of the Chamber of Commerce of the United States, Washington, D. C., dealing with testimony of witnesses before the Ball Committee of the United States Senate, who propose that all forms of Multi-Employer bargaining be prohibited under the Taft-Hartley law.

A BAN of all forms of multi-employer bargaining would be most disruptive of many existing industry-labor relationships, and would actually create industrial chaos in many industries and communities.

More than 4,000,000 employees are today working under multi-employer bargaining contracts. Presumably all of these contracts would be outlawed, and it would become necessary for each employer to bargain individually with only his own employees.

Some 5,000 employer associations engage in varying forms of collective employer action relating to labor relations. The activities of many of these employer groups would be disrupted and their usefulness curtailed by the proposed ban. Many of them would go out of existence, including the San Francisco Employers Council, and hundreds of similar community projects.

In many cases it would be necessary to redetermine the collective bargaining agent in each plant. The doors would be opened wide for jurisdictional raids and organizational efforts of rival unions and rival union leaders within the same plant. The inevitable result would be government intervention on an unheard of scale.

Machinery Exists

In many instances it would mean bringing in new and untrained negotiators on both sides of the collective bargaining table. Much mediation and adjustment machinery would be junked in the process.

In San Francisco, we have developed highly satisfactory mediation machinery through the joint efforts of the San Francisco Employers Council and the Central Labor Council of the AFL. This adjustment machinery, which has developed out of our experience in multi-employer bargaining, has been widely acclaimed by the public and the press of San Francisco, and has been one of the primary factors in our achievement of reasonable industrial stability through industry organization and multi-employer bargaining.

Many examples might be cited to prove that multi-employer bargaining has curtailed strikes. There have been no strikes in the glass industry since 1888, nor in the stove industry since 1891. We have not had a teamsters' strike in San Francisco, under a multi-employer contract, in 40 years.

Experience Cited

We have found from long experience in California communities that a shutdown of an entire industry is far preferable, from the employers' standpoint, to a series of individual strikes which enable a union to "divide and conquer" the individual employer. Proof of this statement is found in the fact that the unions seek to avoid industry tieups, even where they operate under master contracts. An industry shutdown really hurts the union as much as it does the employer. It is naive to assume that a ban upon multi-employer bargaining will effectively prevent unions from making common demands or engaging in mutual aid, or resorting to the "divide and conquer" strategy.

Although it has been alleged that multi-employer bargaining deprives the small operator of his right to bargain, our experience on the Pacific Coast has been directly to the contrary. In his study of group bargaining on the Pacific Coast, Professor Clark C. Kerr of the University of California has found that multi-employer bargaining has given the small employer a more effective voice in the determination of labor conditions.

An examination of the list of industries which engage in multi-employer bargaining in San Francisco shows that many groups are comprised principally of small employers. Before these small employers engaged in multi-employer bargaining, many of them were denied the right to bargain at all by the unions. It was a common practice for some unions unilaterally to determine the terms and conditions of employment for an entire local industry, without even consulting employers.

As an example, employers in the restaurant industry were merely handed printed cards on which the wages and working conditions of all employees were outlined. Employers were informed that if they conformed to these wages and working conditions, they would be listed as union houses. If not, they would be picketed and boycotted.

According to the United States Department of Commerce reports, based upon Social Security Board reports, 87 per cent of the business concerns in San Francisco and 90.6 per cent of the business firms in Los Angeles employ less than 20 employees. These small concerns are fully represented on negotiating committees and governing boards of multi-employer groups and their interests are given full consideration in any decisions reached.

Restrictions Told

Incidentally, I might point out that even some of our biggest and most independent employers in this country have had their initiative and scope of bargaining restricted by the decisions made by other single employers. I cite the recent action of the Chrysler Corporation following the General Motors' settlement; the recent action of the U. S. Steel Corporation following numerous other individual settlements; and the recent reversal of the General Electric policy on wage increases.

Practically every major industry and service organization in San Francisco would find it necessary to revise its entire scheme of collective bargaining if a ban were to be placed on multiple-employer bargaining. The same thing would be true in practically all Pacific Coast and Rocky Mountain cities. It also would be true on an area basis in such major industries as lumber, paper and pulp, food processing, fishing and railroads, in which the operations of individual employers extend beyond the limits of a city or metropolitan district.

It is most significant that the vast majority of employers and industries which have engaged in multi-employer bargaining approve this type of collective bargain-

ing, and are convinced that it holds many advantages for the employers. It seems highly unrealistic and inadvisable to require such employers to abandon a system which they have developed out of experience over the years and which has proven satisfactory, on the mere chance that the proposed ban will lessen the danger of national emergency strikes.

There is grave danger that the proposed ban would prove much more effective against employers than against workers. In other words, it may "back-fire" to the disadvantage of employers for the following reasons: It is much easier to enforce sanctions against employers than against unions. There is no way under our constitution of forcing men to work against their will, and I doubt very much if there is any way of preventing unions from demanding simultaneous termination dates or, in practice, arriving at other common demands.

Our experience during the war, when the War Labor Board resorted to the recommendation for government seizure and operation of private plants as a means of disciplining unions, is ample proof of the inadequacy of sanctions against recalcitrant unions or workers. As long as labor is permitted to exercise its alleged "freedom of speech" by placing picket lines around a plant, it will be a simple matter for unions to tie up large segments of an industry, or even an entire industry.

It is very significant that employers who have engaged in multi-employer bargaining, generally speaking, are convinced that it has many advantages for the employer. Some of these advantages are:

1. United employers strength through joint employer action is a practical answer to labor's technique of "divide and conquer." Very few employers in this country are able to take a strike for an extended period while their competitors remain open. On the other hand, few unions are strong enough to carry on an extended strike against an entire industry in any community. The result of employer organization is a better balance in industrial relations and a tempering effect upon union demands and irresponsible union leadership. Many communities have found that multi-employer bargaining promotes industrial stability. Such, unquestionably, has been the experience of the entire Pacific Coast and Rocky Mountain region where multi-employer bargaining is extensively practiced and where employers have had a long and intensive experience with labor unions.

2. Joint negotiations limit the area of conflict and the opportunity for a multitude of individual disputes. Common interpretation of identical or master contracts reduces the field for grievances. It is a striking fact that industrial tieups over individual grievances, such as plague many industries in other parts of the country, are practically unheard of in San Francisco.

3. Multi-employers bargaining discourages ruinous bidding for short labor supply.

4. Employer organization facilitates the establishment of voluntary bipartite mediation and conciliation processes.

5. Employer organizations have developed common research departments which have proved invaluable, not only to industry groups, but to individual employers.

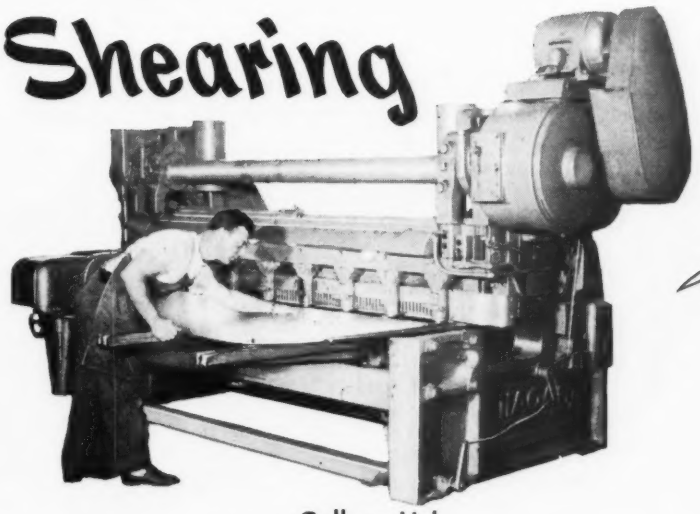
Industrial Compensation Paid to Blast Victims

A decision of broad interest has been rendered by the Industrial Accident Commission of California in connection with the explosion in Los Angeles, of an electro-plating plant where experiments were being conducted on a new polishing process. There was extensive damage to the surrounding area of residences and light industrial plants.

Four employees in a tailoring establishment directly across the street were awarded workmen's compensation benefits because they were injured in varying degrees by falling walls and debris caused by the blast. Although the employer's insurance carrier resisted the awards, the District Court of Appeals ruled that the injuries were not caused by fortuitous and unforeseen circumstances common to anyone who might have been in the area, but that the

(Continued on page 74)

Shearing



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Silicone News

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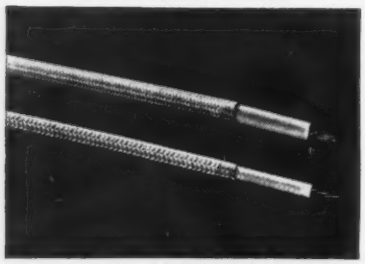

PHOTO COURTESY THE OKONITE COMPANY

Silastic is extruded over wire and cable ranging from No. 18 to 500,000 circular mils in size to provide insulation having maximum resistance to heat, ozone and weathering.*

Silastic* has been chosen to insulate the new line of heat-stable "Okotherm" wire and cable made by the Okonite Company of Passaic, N. J. Silastic* insulation maintains its high dielectric strength even after continuous long time exposure to temperatures as high as 200° C. (400° F.). Its dielectric loss factor is low compared with that of organic rubbers.

Silastic* insulation is practically unaffected by corona or ozone. A severe corona resistance test of Silastic 181 for example, was discontinued after more than 4000 hours without breakdown. The best organic rubber insulating materials break down under this same test in 50 to 150 hours.

Silastic* insulated wires and cables withstand severe outdoor weathering without deterioration because of exceptional water repellency, low moisture absorption, resistance to oxidation and flexibility at low temperatures. Serviceable operating temperatures range from —80° to +400° F.

These properties plus good resistance to a variety of chemicals and hot oil are now available to you in Silastic* insulated wire and cable. Among the many high temperature applications for Silastic* insulated wire or cable are: power plant wiring and lead wire for electric ovens, furnaces and motors.

Other applications include wiring for high intensity floodlights and street lights, and as high voltage ignition and neon sign cable. Our specifications for Silastic* insulated wire and cable are given in pamphlet No. G 6-X.

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Los Angeles • New York
In Canada: Fiberglas Canada, Ltd., Toronto
In England: Albright and Wilson, Ltd., London

Dow Corning
FIRST IN SILICONES

(Continued from page 73)

employees of the tailor were entitled to compensation because their work required their presence on their employer's premises at the time of the blast, and therefore resulting injuries arose out of employment.

In a companion case, minor children dependents of a candy cutter who sustained fatal injuries when the explosion caused collapse of a warehouse where he was working, were awarded death benefits. The District Court of Appeals dismissed the insurance carrier's objections by denying a writ of review.

Converted LSM Makes Fast Lumber Carrier

Lumbermen along the Pacific Coast are watching with interest the first operations of the new carrier, Rolando, owned by Irwin & Lyons Lumber Co. and working between North Bend, Ore., and San Francisco. The vessel is a converted Navy LSM (landing ship, medium) capable of 12 to 14 knots. The craft carries packaged lumber, loaded in units of about 2500 feet with slings kept in place. Due to the method of loading, discharge of cargo is at the rate of 100,000 feet per hour, as compared to 15,000 feet by conventional methods.

Some interesting sidelights have resulted from this experiment, with the net result that the Rolando has been the target of labor disputes since her maiden voyage a few weeks ago. For one thing, no one can decide whether the craft carries a deck load or not—the cargo space in an LSM is open to the sky. One faction declares that it carries *all* deck load, while the other insists that it is *all* in the hold.

Cause of the labor strife is the fact that the vessel requires only two "front men" to load or unload—two stevedores on the deck to hook on or unhook each sling of lumber. The union demands that a full gang of 11 men be hired, if only in a stand-by capacity.

When the owners started operations, they hired a crew that was organized by the Sailors Union of the Pacific (SUP), and the company signed a vertical contract with that union. However, CIO Marine Cooks and Firemen, and the independent Marine Firemen lodged protests, claiming they have jurisdiction over their branches. The vessel was center of a riot at Wilmington harbor recently, but after unloading she was allowed to sail for Oregon.

Compensation Denied

The Washington State Supreme Court has reversed Judge Richmond, Superior Court of Pierce County, and has again maintained as it did previously in the St. Paul & Tacoma Lumber Company case that employees who fail to go to work on jobs awaiting them because of their reluctance to cross picket lines established by other unions, are not eligible to unemployment compensation.

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Regional Cooperation Report Is Prepared

Recommendations whose nature is not yet disclosed regarding cooperation of state and private agencies in the West on a program for Western industrial development were drawn up October 18 by a committee representing the Commissions on Interstate Cooperation. These proposals will be submitted at the next meeting of the Western Governors' Conference, the date for which has not yet been set.

The committeemen present at this meeting, held in San Francisco, were W. C. Jacobsen, executive secretary of the California Commission on Interstate Cooperation; Elton McQuery, director of the Colorado Resources Development Council; Alvin H. Reading, State Budget Director for Idaho; Gus Backman, manager of the Salt Lake City Chamber of Commerce; E. R. Fetterolf, manager of the Tacoma Chamber of Commerce, and H. C. Anderson, secretary-manager of the Wyoming Commerce and Industry Commission.

This action dates back to a resolution adopted at the April, 1948, meeting of the Western Governors' Conference, calling on the Commissions of Interstate Cooperation to formulate for submission to the conference a long-term program for industrial development in the West. At a meeting in Seattle September 17 of these commissions and of the Western regional group of the National Council of State Governments, it was decided to set up a committee composed of one member from each state to prepare a report for the governors.

Utah Pattern Urged

Opposition to setting up a new agency to work on an industrial program was voiced at the Seattle meeting by Mr. Backman and Mr. Fetterolf. The former suggested that each state follow the pattern set up in Utah, where a special committee was established, composed of various interests in the state, such as labor, university presidents, chamber of commerce representatives and others. The latter though the Western States Council, working with the Western Governors' Conference and the Council of State Governments could accomplish interstate coordination of a regional level.

A Western clearing house to exchange industrial research information was recommended by Alvin H. Reading, Idaho State Budget Director, and Elton McQuery, director of the Colorado Resources Development Council. Stanley Crook, secretary of the Pacific Coast Board of Intergovernmental Relations, reported that his organization had set up a technical committee which might well coordinate information on a regional level that could be developed by university research institutes in each state.

Non-Flammable Fluid For Aircraft Developed

Standard Oil Company of California is marketing the first completely non-flammable aircraft hydraulic fluid which, assertedly will not ignite when subjected to a 5000-degree flame.

The product, Standard reported, will eliminate a fire hazard that is a factor with bigger planes which use very high pressure hydraulic systems.

Standard's research organization, the California Research Corporation, developed the product after two years of concentrated experimentation.

Shale Oil Project Advances in Colorado

Dr. A. C. Fieldner, chief of the fuel and explosive division of the U. S. Bureau of Mines, declared recently that the Rifle, Colo., oil shale plant experimentation is more than half-way toward successful solution.

The problem of mining the shale has been virtually solved, experiments in distillation of the shale into crude are about one-third along, and refining experiments will be underway within six months, it was reported.

The Rifle project was undertaken in 1944 but was delayed during the war.

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All Foremen Participate in Negotiating Contract

DOUBLE results — a more satisfactory and workable document, plus great strengthening of the position of the foremen — are the outcome of the negotiating system on annual contracts used at Grayson Heat Controls for the last three years. It is the direct opposite of what might be termed the "master mind" method of negotiating.

A long time ahead of the date for reopening the contract, top management and the foremen in this plant, located at Lynwood, just outside of Los Angeles, start preparing a document which will embody their joint ideas of a suitable contract. Then, instead of receiving a proposal from the union and assuming a defensive position, they reverse the procedure.

As reported by President Tom Arden, a so-called "package deal" prepared by a very small management committee, or by the industrial relations manager or a labor relations attorney, has several important objections. One of these is the very fact that it is a "package deal," with contents very likely totally unknown to the foreman who have to administer it.

Another objection is that the desire to protect management's position in every possible contingency results in a cumbersome document difficult to administer. A third is that it may be lacking in practical points which would have been discovered had the foremen been given an opportunity to consider the proposals and offer their suggestions.

Under the Grayson method, changes in working conditions and rates of pay that seem desirable are brought to light, thoroughly discussed and agreed upon by the whole management team well in advance. Naturally, the document contains compromises, but the final result is something which they are all ready to support. If the union proposals contain anything which has not been already discussed they are referred back to another meeting of the management group for consideration before the negotiating committee will touch them.

Although many minds have cooperated in preparing the management case, only a small committee engages in the negotiations, but all the foremen are encouraged to attend the negotiating meeting. The result is an attendance of two to one in favor of management.

No objection has been raised by the union against having so many on the management side present, an attitude that perhaps is influenced by the fact that management encourages as large a labor attendance as possible; in fact, management has insisted that the union negotiating committee be large enough to represent the viewpoint of the employees adequately. This insistence has proved to be of considerable value in weeding out clauses devised by international headquarters of the union and really not desired by the employees at all.

The system makes the foremen the means of getting an accurate picture of what is happening in the negotiations back to the shop, instead of making him a virtual outsider who may suffer the humiliation of getting his information from the shop steward or the employees themselves. It also enables him to settle trifling matters before they swell up into grievances.

It has been found to be an effective means of developing the foreman as a manager, because it puts him in a position to know all the answers and to be the one to whom the employees turn for information instead of someone else acquiring a reputation for being the "wise guy" who can explain everything. His authority also is strengthened by the fact that all the foremen sign the contract.

Still another advantage is uniformity of interpretation among all the foremen, so that an employee does not get two different answers from two foremen.

• T. L. Peckenpaugh, operator of Transit Freeze, Inc., Downey, Calif., has just pushed the right button of the rear-end controls and down comes a side of beef ready for final cutting into steaks. By external push-button control the traveling automatic refrigerator loads and unloads itself by means of a conveyor system and tail-gate elevator. The unit was built to Peckenpaugh's specifications by Aluminum Body Corp., Vernon, Calif. It is hauled by a White truck.

Columbia Resources Committees Appointed

A Columbia River resources committee was set up at a meeting of several organizations in Spokane September 30, consisting of five members each from Washington, Oregon, Idaho and Montana. They appointed the following sub-committees:

(1) Executive: W. E. Welsh, Boise, chairman; D. B. Noble, Portland, secretary; Earl W. Murphy, Idaho; Thomas M. Robins, Oregon; L. A. Colby, Montana, and R. L. Rutter, Washington.

(2) Committee to study proposals to divert Columbia River water and power to other regions: J. A. Ford, Washington, chairman; Ed. Lage, Oregon; John Lee, Idaho; J. S. McFarland, Montana.

(3) Committee to study the advisability and method of getting more state interest and participation in the regional resources program: Earl Murphy, Idaho, chairman; W. P. Stapleton, Washington; George Mungas, Montana; R. L. Clark, Oregon.

(4) Committee to study the Columbia Basin Inter-Agency Committee with the view of getting better understanding and public interest in its work, also to cooperate with it and help to coordinate efforts in advancing a sound regional program: D. B. Noble, Oregon, chairman; L. A. Colby, Montana; Roy Huffman, Idaho; R. L. Rutter, Washington.

(5) Committee to study needs for a sound federal policy that will aid federal agencies charged with the responsibility of generating and selling power: Thomas Martin, Idaho, chairman; C. H. Rittenour, Montana; Howard Turner, Oregon; Ralph Gillespie, Washington.

11,000,000 Tons of Logs On Washington Highways

A survey of logging traffic in the state of Washington made by Gordon Marckworth, dean of the college of forestry, University of Washington, for the Pacific Logging Congress, reveals that in the coming 10 years there will be transported over public highways each year 2,348,000,000 feet of logs, or 11,740,000 tons. This compares with a total estimated 7,448,000 tons of agricultural produce to be hauled each year.

Although the center of the lumber industry itself has moved from Washington to Oregon, the former state still leads in value of forest products, because of the greater number of pulp, paper, veneer and remanufacturing plants in the former state, Norman Jacobsen, forester for the St. Paul and Tacoma Lumber Company, reported at the logging meeting. Washington's total gross value in 1948 was $777,000,000, while Oregon's was only $588,000,000.

THE WEST ON ITS WAY

ARIZONA

GENERAL LEASES ACREAGE—Lease of 64,000 acres in Navajo and Apache counties in northeastern Arizona for the drilling of exploratory oil wells is announced by General Petroleum Corporation, Los Angeles. The area long has been recognized as potential oil land, General said.

$200,000,000 ORE OUTPUT—Ore worth $207,096,809 was produced in Arizona in 1947, the State Department of Mineral Resources discloses. Charles H. Dunning, director of the department, placed the value of gold, silver, copper, lead and zinc at $182,096,809. The value of less ordinary metals and of non-metallics produced is estimated at $25,000,000. The 1947 production represents an increase of about 50 per cent over 1946. Anticipation is that the 1948 output may show a general decrease of about 5 per cent.

NEW PIPE SUPPLY FIRM—Sunny Pipe and Supply Co., Sunnyslope, near Phoenix, has been organized by a group of Midwestern steel men to supply pipe and fittings to Central Arizona. Robert H. Sonneborn, Chicago steel specialist, heads the organizing committee. Sanford F. Morrison, for 18 years with Republic Steel Corporation's sales division, will be vice-president and general manager. J. Lester Williams, president of Chicago Nipple Manufacturing Co., is treasurer, and Fred W. Rosenfeld, Phoenix attorney, is secretary.

STOUT SELECTS PHOENIX — Removal of the Stout Engineering Laboratories, Inc., from Detroit to Phoenix is announced by William B. Stout, aviation pioneer.

CALIFORNIA

FORD LEASES PROPERTY—Ford Motor Company leases a 137,000-square foot warehouse and 9,300-square foot office from Santa Fe Railway to provide space for automobile parts for service needs in the Richmond district. The facilities in Permanente Shipyard No. 2 will house about $3,000,000 worth of parts. All Ford parts for Richmond district plus some parts now carried at Salt Lake City, Seattle, and Long Beach will be stocked, as will some Lincoln, Mercury, and transit bus parts. The 90,000-square foot service parts section now in the Richmond assembly plant will become available for production stock.

$100,000 NEWSPAPER PLANT—The San Mateo (Calif.) Times will start construction soon on a new $100,000 plant.

FIVE-ACRE DEVELOPMENT—Ashton Steel Products Company of San Francisco plans development of a five-acre parcel of industrial land on Road 17 in the San Pablo manufacturing district.

—Photo courtesy Bethlehem Pacific

• Owens-Corning Fiberglas Corporation's new warehouse and plant now under construction at Santa Clara, California. Erection of the more than 2,000 tons of structural steel is expected to be completed around the first of December.

• New Bayshore plant of Western Crown Cork & Seal Corp. of San Francisco provides larger facilities for Western customers.

NEW ROLLING STOCK—Purchase of 250 new gondola cars and 70 track miles of new 115-pound rail to cost a total of $3,200,000 is announced by Western Pacific Railroad Company. The new cars will be used primarily for transportation of steel products from Geneva Steel Company mill, Provo, Utah, to West Coast points. Two hundred of the cars will handle shipments of coils of steel sheets for the new sheet steel mill of Columbia Steel Company at Pittsburg. Colorado Fuel and Iron Company will roll the rail.

AIR FORCE CONTRACT—Thompson Aircraft Tire Corp., San Francisco, has been awarded a $200,000 U. S. Air Force contract for retreading airplane tires. Included is an immediate priority of production for "Operation Vittles," the Berlin airlift. Walter Schlichtmann, president, reports his company is the only one in the United States retreading this size of airplane tire.

EXPRESS FIRM MOVING—Operating headquarters of Pacific Intermountain Express Co., San Francisco-Chicago trucking line, will be removed from Salt Lake City to San Francisco with 75 members of the Utah staff to be transferred. Vice-presidents C. E. Johnson, C. G. Zwingle and E. F. Eardley, and Treasurer I. G. Hodge will be among these. Salt Lake City will continue to be a major terminal and facilities there are being expanded.

DESERT PRINTING PLANT—Commercial work is now being turned out by Randall Henderson, editor of Desert Magazine, from his fourth desert printing plant at Palm Desert, near Palm Springs, Calif. The $250,000 plant is in the middle of one of the West's driest deserts. Eight on-the-roof Payne evaporative coolers will keep the mechanical department cool and Mr. Henderson hopes soon to install refrigeration units to solve his paper storage problems.

MOVES INTO NEW PLANT—DeBoom Paint Company now occupies a new plant at 1300 - 22nd St., San Francisco, where production is expected to be increased 50 per cent through installation of latest machinery and expanded facilities. Claude Witzel is president. The new plant comprises more than 40,000 square feet and employs 40 persons. DeBoom has been in business since 1909 and produces industrial, automotive and marine finishes.

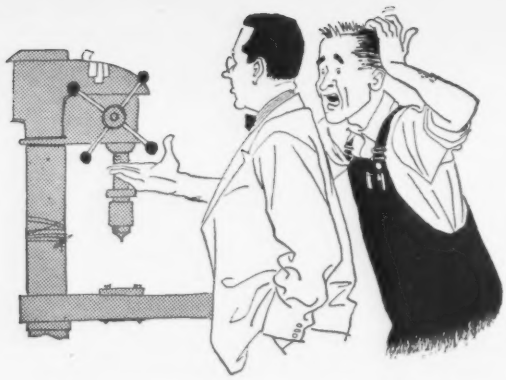
ACQUIRE AWNING FIRM INTEREST—Negotiations for purchase of the interests of a Texas group in the Zephyr Awning Company and the National Ventilated Awning Company of Northern California have been completed by Charles C. Bowen, San Francisco, and associates. The company manufactures and sells patented California Redwood Awning, maintaining a factory in Stockton, and sales forces and representatives in 200 northern California cities.

RICH LEDGE REPORTED — Fred Anderson, general manager of Ancho-Erie Mining Co., reports discovery of a rich gold ledge in the Ancho-Erie mine north of Washington, Nevada County, Calif. Ore so far developed has a minimum value of $60 a ton, he said, with much of it above that figure. He said development has not advanced sufficiently to define the extent of the vein but described the discovery as one of the best gold strikes in Nevada County in years.

AIRCRAFT WORK EXPANDS—Rohr Aircraft Corporation of San Diego announces lengthening of the work week for 2,600 employees to a six-day, 48-hour schedule to meet new production demands. Rohr has sub-contracts from Boeing, Lockheed and Consolidated-Vultee.

PLANT BID DUE—Intention to bid for two aluminum reduction plants, one at Massena, N. Y., and the other at Riverbank, Calif., is announced by the Non-Ferrous Founders Society. James Wolfe, executive-secretary, Chicago, said notices have been sent to the War Assets Administration and Federal Works Agency.

(Continued on page 78)



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THE WEST ON ITS WAY

(Continued from page 77)

STAUFFER PROPERTIES LEASED—Stauffer Chemical Company, San Francisco, announces lease of their phosphate rock properties near Sage (Beckwith Hills), Wyo., to San Francisco Chemical Company, a division of Mountain Copper Company. Operations have been under way for some time and several million tons of high grade ore have been proved up. The mine is considered the greatest producer in the West, and will furnish Stauffer's requirements for their California Superphosphate plants. The San Francisco Chemical Company is mining by the open pit method and operates a crushing plant, Raymond mills, and bagging plant.

ALUMINUM PLANT SOLD—Sale of a surplus, government-owned aluminum extrusion plant at Los Angeles to the Harvey Machine Company, Los Angeles, for $1,500,000 announced by War Assets Administration. The purchaser has been operating the plant under lease since 1946.

NEW LONG BEACH PLANT—Hancock Chemical Company, 2828 Junipero Road, Long Beach, will construct $1,000,000 plant at 23208 South Alameda, Long Beach, to separate sulphur from a gas that begins as hydrogen sulphide in oil refinery operations. Production of 50 tons of sulphur daily is anticipated. W. J. Reid is president of the new affiliate of Hancock Oil Company.

FLYING AUTOMOBILE—Rights for further development of the Hall flying automobile have been obtained by T. P. Hall of San Diego, the designer, from Consolidated Vultee Aircraft Corporation.

NEW STOCKTON PLANT—J. I. Case Company formally opened a new Stockton plant and celebrated 50 years of doing business in California with an exhibition and demonstration of a full line of farm machinery.

TERRACER AGREEMENT — Preco Incorporated, Los Angeles, has entered an agreement with Caterpillar Tractor Co., Peoria, Ill., whereby it will manufacture No. 1 and No. 2 terracers for sale through Caterpillar distribution channels.

AIRPORT GROWTH—Los Angeles airport registered its 2,000,000th passenger since the $12,300,000 city airport was opened 22 months ago. The airport also has handled 22,000,000 pounds of air cargo and 15,000,000 pounds of air mail.

PAINT FIRM EXPANDS—W. P. Fuller & Company is constructing a three-story building at 210 North Avenue 21, in the Central district of Los Angeles, to provide 1,000 square feet for additional manufacture of paint, varnish and lacquer.

SOUTHERN CALIFORNIA DEVELOPMENT — New industries in southern California include these: **Alhambra area**—Alhambra Plastics & Mfg. Co., 2015 N. Marianna Ave., dies, tools, plastic displays and signs; Roy Kinch, president. **El Monte area**—Hudlen Hydraulic Coupling Co., 1138 Chico Ave., couplings for hydraulic lines on farm implements; A. J. Hudson, T. F. Leonard, partners. Ipsen Mfg. Co., 459 E. Eliot St., individual laying cages and other poultry equipment; V. M. Ipsen, proprietor. Lilley Bastien Hand-Painted Plastics, 2603 E. Valley Blvd.; painting plastics. Royal California Pottery, 2139 S. Rosemead Blvd., art pottery for chain stores; P. J. Duran, owner. Skarda, Inc., 1011 S. Seaman Ave., jigs, fixtures, aircraft parts; Ralph V. Skarda, owner. **Hawthorne**—Walsh Putty Co., 12500 Inglewood Ave., plasterer's putty; T. J. Walsh, president. **Los Angeles**—Kirshmoor, Inc., office at 850 S. Broadway, plant at 2306 S. Main St.; women's coats and suits. Sanders Suedes, 2415 S. Broadway, erecting 3,500 sq. ft. building; will manufacture men's and women's suede apparel; Henry Sanders, owner. Lindberg Steel Treating Co., subsidiary of Lindberg Engineering Co., Chicago; opened plant at 3537 E. 25th St.; J. B. Froblom, manager. Standard Coffee Co., 2940 E. Olympic Blvd., processing coffee; William B. Reily, president. Candy Corp. of America, office at 1429 Westwood Blvd., plant at 11230 W. Olympic Blvd., boxed candy, candy bars, bubble gum; M. L. Merrick, manager. **North Hollywood**—Industrial Tubular Equipment Co., 12906 Saticoy St., making grandstands for assembly where needed; C. A. Buchen, president. **South Gate**—Her Majesty Dishwasher Co., 5321 Firestone Blvd., portable dishwashers; Charles A. Kleinman and Ray W. Burke, partners. Ed Reisner Forge Works, 5241 Firestone Blvd., manufacture of drop forgings and open-flame hammer forgings. **Vernon area**—Brass-Copper Lighting Mfg. Co., 609 E. 55th St., residential lighting fixtures. Colony Casuals, 660 E. 22nd St., women's sport dresses. **Expansions include: Inglewood area**—Worth Mfg. Co., 9632 Bellanca Ave., has 15,000 sq. ft., aircraft parts. **Los Angeles**—Hill Bros. Chemical Co., 2159 Bay St., erecting two buildings, cement flooring compounds, refrigeration chemicals. International Battery Corp., 626 W. 15th St., 12,000 sq. ft. addition, storage batteries. Kiener Machine Products Co., 1831 N. Main St., in new plant; plumbing specialties, sink strainers, etc. Podell & Squires, 3000 S. Main St., in new 5,000 sq. ft. plant, upholstered furniture.

YARD TO CONVERT VESSEL—San Francisco Yard of Bethlehem Steel Co., Shipbuilding Division, has been awarded a contract for the reconversion of a Navy AP, the Winged Arrow, to a standard C-2 cargo vessel with accommodations for eight passengers. The vessel is one of ten purchased on the Pacific Coast by Waterman Steamship Co., Mobile, Ala.

NEW ENGINEERING OFFICES—J. O. Ross Engineering Corporation moves into larger offices in Westinghouse Bldg., 600 St. Paul Ave., Los Angeles, to handle expanding Pacific Coast business. R. W. Morsch continues in charge of the new Los Angeles office.

ASBESTOS FIRMS COMBINE—Two pioneer asbestos companies combine operations with purchase of the facilities of Bay Cities Asbestos Co., Oakland, by Western Asbestos Company. Charles B. Purcell, president of Western, points out the expanded facilities will provide better service for customers of both companies in California and Nevada. D. Gerald Barr is appointed manager of the enlarged offices at 251 Fifth, Ave., Oakland.

CURTAIN PLANT—Powdrell & Alexander, Inc., Danielson, Conn., is constructing a 36,000 square foot building at 1625 Flower St., Glendale, for the manufacture of all types of window curtains.

NEW CABINET PLANT—Central Cabinet Company of Arcadia is building a 40,000 square foot plant at 1160 Rosemead Boulevard, El Monte, to which location it will move for expanded activities.

COLORADO

CONTROL PURCHASED—J. R. Travis, president and general manager of the Eston Metal Products Co. of Denver, with plants in Denver, Albuquerque, Omaha, Billings and Hutchinson, has purchased the Omaha interest in the company, and the control of the Rocky Mountain operations is now in the hands of himself and his son, James Travis.

NEW DENVER PROJECT—Morris P. Kirk & Son, Inc., Los Angeles, operating as the Smelter Supply Company, is melting down old batteries in a Denver plant before shipment to the company's new smelter in Salt Lake City.

NEW SWITCHING YARDS—Denver & Rio Grande Railroad has begun construction of a new switching yard in Denver to handle and expedite increased freight traffic.

(Continued on page 80)

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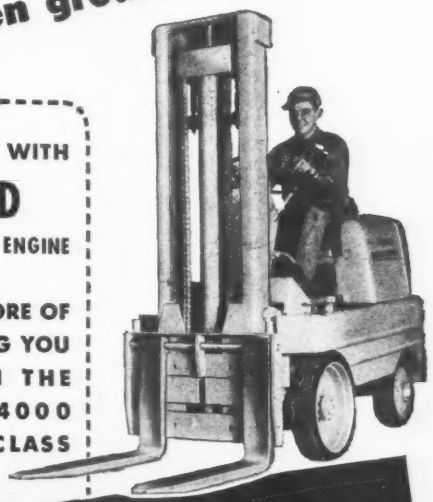

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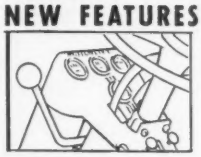

Exclusive Uni-Lever Control
Single lever located on steering column controls lifting and tilting mechanism.

All Controls and Instruments Clustered in Front of Driver
An exclusive Mo-Tow-Lift advantage. Gives accurate control of every operation.

3rd BOOTH 520
★★★★
NATIONAL MATERIALS HANDLING EXPOSITION
PHILADELPHIA ★ CONVENTION HALL JAN 10-14, 1949

• Always a top performer and now basically improved, MO-TOW-LIFT 1948 offers you more of everything — in performance, dependability, safety, low cost operation. MO-TOW-LIFT 1948 enables you to mechanize more of your materials handling jobs. Its greater payload efficiency cuts costs; its own maintenance expense is lower because many of the wearable parts are standard Ford parts. No other fork lift truck offers you all these advantages:

☆ "Around-the-corner" service with famous Ford Industrial Engine ☆ Shortest turning radius for greater usability ☆ Enclosed upper hoist assembly lessens dirt abrasion in mast ☆ Extra safety from heavy-duty armor frame ☆ Adjustable posture seat for greater driver comfort.

Before you invest in any fork lift truck get the facts on MO-TOW-LIFT 1948. Write for Bulletin . . . or see your Classified Telephone Directory for nearest distributor.

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INDOOR MILES Made EASIER and SAFER
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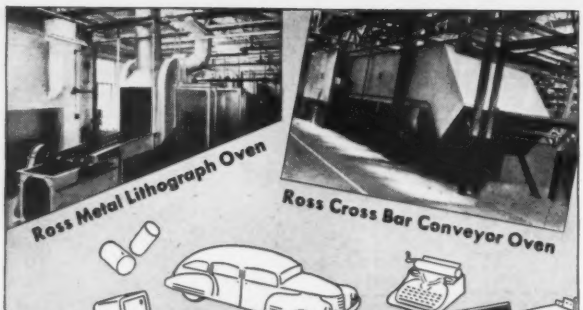

Makers of Metal Products know the modern way to SMOOTHER, SPEEDIER FINISHING

Automobiles, Business Machines, Household Appliances, Cans, Toys and the many other types of products made of metal exert their appeal largely through their surface finish. How to make that finish attractive and lasting is one major production problem. How to apply such a finish faster for greater output is another problem.

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ROSS OVENS

In close cooperation with the makers of fine finishing materials, the builders of Ross Baking and Drying Ovens have solved both problems for the metal working industry. They have developed the apparatus that assures utmost accuracy in applying and controlling the important elements of heat, air circulation and humidity that together determine the quality and quantity of output from finishing operations.

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Send For Our New Descriptive Bulletin Just Published!

Write to our office nearest you for your copy of our Bulletin No. 132W — a 24 page book that treats the entire subject of industrial baking, curing and heat treating. Fully illustrated, charts, diagrams and helpful data.

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DESIGNERS AND BUILDERS OF AIR PROCESSING SYSTEMS

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600 St. Paul Ave. **Los Angeles, 14**

THE WEST ON ITS WAY

(Continued from page 79)

IDAHO

PHOSPHATE SUPPLY NEARS—The Idaho Farm Bureau Federation, with more than 7,000 members, has contracted to buy the entire output of treble-super phosphate to be produced at the new Wendell, Idaho, plant, according to John Webb, IFBF secretary, Pocatello. The IFBF and Gates Bros. Co., Wendell, jointly helped finance the project. Charles T. Gates, manager, said the ultimate goal is to supply the needs of farm bureau members in the eleven Western states.

MONTANA

SAWDUST FOR CATTLE—Members of the Montana State College faculty are studying research being done at Madison, Wisconsin, on conversion of sawdust into molasses for livestock feed. Upon results of their inspection will depend whether or not a semi-commercial plant for utilizing Montana sawdust is built at Bozeman. If the process proves practical, other similar plants would be built at various centers in the state.

GYPSUM PLANT EXPANDS—The United States Gypsum Company's Heath, Mont., plant, where plasterboard is manufactured, is expanding according to V. E. Coffman, works manager. He said the plant has increased production 15 per cent during the year, has purchased new mining equipment, is enlarging the warehouse, and has replaced five miles of mining railway with shuttle cars.

MAJOR OIL DISCOVERY—Musselshell County may become the center of a new oil empire, following discovery of rich oil sands about 25 miles northeast of Roundup. A wildcat well of the Amerada Petroleum Corp. was brought in recently at 4,200 feet. Engineers estimate production to be 1,040 barrels per day of 34-gravity oil.

NEVADA

SEEK HOUSING PROJECT—Basic Refractories and Standard Slag Company, both operating in Gabbs Valley area, are negotiating with War Assets Administration for an Army housing project at Gabbs Valley in southern Nevada.

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- Cut to your requirements
- Built to high standards
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ZINC PLANT EXPANDS—An expansion program costing $750,000 is being undertaken by Sullivan Mining Company at its electrolytic zinc plant to step up production for the industry and mines it serves. These include Bunker Hill & Sullivan and Hecla Mining Company. Smelter capacity is expected to be boosted from 3,300 to 4,000 tons, L. E. Hanley, president of Hecla, reports.

OREGON

WEYERHAEUSER BUYS EWAUNA—Ewauna Box Company, Klamath Falls, has been purchased by the Weyerhaeuser Timber Company in a deal involving a 150,000 board foot sawmill, box factory, 75-acre site, the Bly Logging Company, and other facilities. The price reportedly involved more than $1,000,000. Weyerhaeuser will divert the Ewauna timber supply to its own Klamath Falls plant and will offer the Ewauna site to other industry.

POWER PLANS REVEALED—The California-Oregon Power Company plans to spend $30,000,000 on a construction program during the next five years for completion of the Toketee Falls hydroelectric plant on the North Umpqua River, for construction of two additional hydroelectric plants in the same area, and for other additions and improvements, A. S. Cummings, president, reports. The Toketee project will produce 27,000 kilowatts of the 40,500 for which it is designed, in 1949. The new projects will be designed to produce an additional 65,000 kw.

GILMORE BUYS PLANT—Oregon Steel Mills, Portland, has been acquired by Gilmore Steel & Supply Co., San Francisco. The amount involved was not disclosed but was understood to be nearly $3,000,000. A. G. Thies, Gilmore vice-president, said Arthur M. Mears, Oregon president, will remain as consultant.

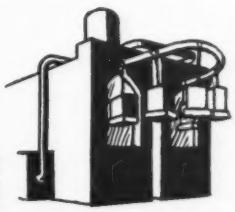
PLANT WILL EXPAND—Iron Fireman Mfg. Co., 2838 S.E. 9th Ave., Portland, announces two-story addition to present buildings of heating control division. Estimated cost with machinery is $180,000.

BAKERY PLANS ADDITION—Langendorf United Bakery, Inc., 1711 S.E. 10th Ave., Portland, plans 11,000 sq. ft. concrete addition to bakery plant to cost estimated $78,000.

NEW INSULATING PLANT—Dant & Russell, Inc., announces that a processing plant to convert a glasslike volcanic residue into an insulating material will be constructed at Frieda, 13 miles south of Maupin,

(Continued on page 82)

Clean Metal Before Painting



At Less Cost per sq. foot

Tests show it costs you less to clean and condition ferrous metals with the Oakite CrysCoat Process. Good point to keep in mind when you are readying metal for paint, japan and lacquer finishes.

This specially formulated acid cleaner provides adhesion for durable, sales-appealing finishes by removing light oils, fabricating compounds, shop dirt. At the same time, the Oakite CrysCoat Process develops on metal an inert, microscopically thin phosphate film—a fine receptive base for your finishes. Treatment also inhibits rust before finishing; localizes corrosion if finish is broken. Complete technical data on the Oakite CrysCoat Process in FREE Service Report No. 6713.

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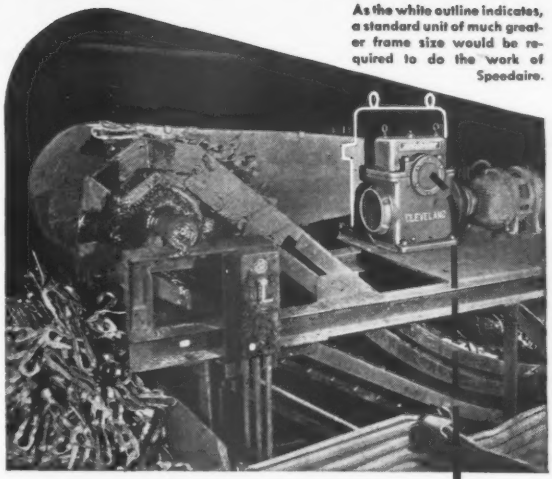
Specialized Industrial Cleaning



As the white outline indicates, a standard unit of much greater frame size would be required to do the work of Speedaire.

13 *SPEEDAIRES* in auto forge shop save money, weight and space

THIRTEEN Speedaires are at work in this auto forge shop. Three drive cold scrap trim conveyors, two operate scrap rattlers, and eight drive cold billet conveyors.

For each application, Speedaire offered three big advantages—a saving in cost, a saving in weight, and a saving in space occupied. The unit shown here, driving a scrap conveyor, weighed 25% less, took 40% less space than a conventional worm-gear unit required to do the work, and saved $84.50.

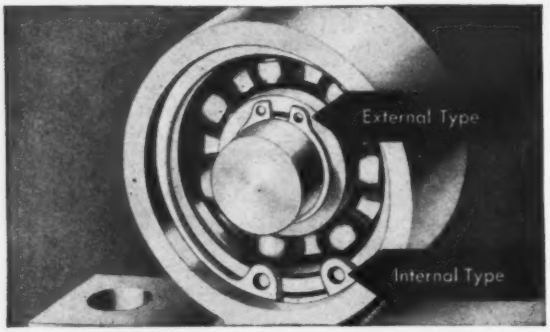
Speedaire is Cleveland's new fan-cooled worm-gear speed reducer. Because it is fan-cooled, Speedaire will do more work—will deliver up to *double the horsepower* of standard worm units of equal frame size, at usual motor speeds. It can be installed economically on many applications where other types have been used heretofore—giving you the advantages of a compact right-angle drive. Speedaire gives the same long, trouble-free service characteristic of all Clevelands.

For full description, send for Catalog 300. The Cleveland Worm & Gear Co., 3269 E. 80th St., Cleveland 4, Ohio.

Western Offices: Seattle, Portland, San Francisco, Los Angeles

CLEVELAND
Worm Gear
Speed Reducers

WALDES TRUARC RETAINING RINGS



Waldes Truarc Retaining Rings are a new radical approach to the locking, securing and positioning of machine parts such as gears, bushings and bearings on shafts and in housings. They can be applied where formerly only such commonly accepted fasteners as nuts and bolts, cotter pins, screwfastened collars and housing covers were used.

WRITE FOR CATALOG

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THE WEST ON ITS WAY

(Continued from page 81)

to create a million-dollar industry. Another plant now operating at St. Helens will be moved to Frieda. Sixty persons will be employed starting next June. The substance, perlite, is mined and manufactured into lightweight insulating material used in plaster and other products. Thomas W. Dant is company president.

AMMONIA PLANTS SOUGHT—Western States Council, a group composed of chambers of commerce of eleven Western states, is pushing plans to secure plants in the West to produce anhydrous ammonia. Clay Cochran, secretary of the Salem Chamber of Commerce, is chairman of the group. The first of the proposed plants probably will be located in Wyoming, Cochran said. Jack Simplot, Boise industrialist and a partner in Columbia Metals Corporation and one of the owners of the Salem fertilizer plant, recently announced plans to build fertilizer mixing plants at Salem, Eugene and Klamath Falls. Anhydrous ammonia is a vital ingredient in the production of ammonium sulphate fertilizer.

PLAN WHEEL PLANT—Announcement of plans for a Portland plant to convert automobile wheels to a new type of suspension and springing is made by P. G. Gilbert, Seattle, inventor of the development, and his associate, J. J. King, Seattle machinist.

NEW HEAT TREATING DEPARTMENT—William Kubeck, owner of Scientific Tool Works, 2365 N.W. 22nd Ave., Portland, announces installation of a new heat treating department.

NEW MILL PLANNED—Gervais is to be the site of a new sawmill to operate as the Gervais Lumber Company.

PLANT PURCHASED—Wilson River Logging Co., subsidiary of the Northwest Door Co., Tacoma, Wash., has purchased the customs drying and remanufacturing plant of Peninsula Forest Products Co., Portland, operated for a number of years by S. R. Smith and associates.

UTAH

ANACONDA BUYS TUNNEL—Anaconda Copper Mining Company has been confirmed as owner of the National Tunnel and Mines Company, Tooele, Utah. The property was sold at auction on Anaconda's sole bid of $500,000.

MORCK SPEED-LINE BRUSHES

"The Choice of Master Painters from the Statue of Liberty to the Golden Gate"

Cover More Square Feet . . . FASTER

Heavy industrial maintenance jobs demand a lot from brushes. Morck Speed-Line *100% Pure Hog Bristle* Brushes are designed to meet this requirement. They are built to the specifications of master painters . . . to meet every type of job. . . production line or maintenance.

Morck's master craftsmen build feel and balance into these modern painters' tools...for easy, fast, efficient work with better lay-on and brush-out. Long lasting, usable right down to the heel, for still more economy. Give your painters Morck Speed-Line *100% Pure Hog Bristle* Brushes and your painting problems stop.

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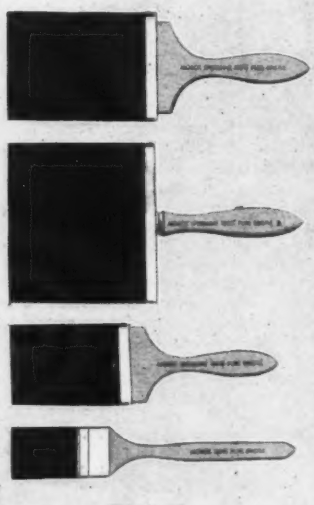
MORCK'S PAINTER'S KIT
100% PURE HOG BRISTLE

Morck's big-4 are a must for painters...Stucco, Wall, Enamel and Sash. Brushes you'll be proud to own.



SEE THEM AT YOUR DEALER'S

POWER EXPANSION PLANNED—George M. Gadsby, president of Utah Power & Light Company, reports plans of the firm to spend an average of about $9,000,000 annually through 1953 for expanded facilities. The new extensions are for anticipated growth in the Intermountain area. He estimated the Ogden-Salt Lake area will practically double electricity uses by 1953.

MATCH BLOCK PLANT MOVED—The Spokane match block plant of the Ohio Match Company will be moved to a new location at Huetter, just west of Coeur d'Alene, where the firm has a large saw mill and planing mill. Reason for the move is to eliminate a 32-mile rail haul from the Idaho saw mill to Spokane. White pine timber has been cut in Idaho and sawed into planks, which were then shipped to Spokane for conversion into match blocks. Blocks are shipped to the company's main plant at Wadsworth, Ohio, for processing into matches. Approximately 100 employees will be moved from Spokane.

WASHINGTON

BOEING PLANS HANGAR—Plans for a $4,000,000 experimental and flight test hangar on Boeing Field (King County airport) have been revealed by the Boeing Airplane Company in seeking to lease a hangar site on the King County-owned field.

TACOMA TO REPAIR DIESELS—Repair and maintenance work on all Northern Pacific Railway diesel-electric locomotive equipment will be handled in the company's South Tacoma shops, H. J. McLain, superintendent of shops, reports. He informed the Industrial Bureau of the Tacoma Chamber that $258,000 is being expended for tools, machines and equipment to provide expanded facilities. A 10 per cent increase in payroll is forecast.

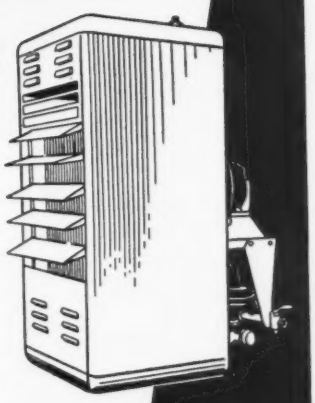
POWER FIRM EXPANDS—Purchase of the Potlatch, Idaho, electrical distribution system of Potlatch Forests, Inc., is announced by the Washington Water Power Company. No price was disclosed.

ZINC SMELTING TEST SET—Pend Oreille Mines & Metal Company has taken up its option on a five-year lease of the former Mead magnesium plant at Spokane, according to W. B. McGinnis, Seattle, chief of the War Assets Administration industrial property division. He said the company was granted a six-month lease to experiment with a new process for smelting zinc ores in vacuum furnaces.

(Continued on page 84)

EFFICIENT, ECONOMICAL

-and QUIET HEATING with "DESERT-AIR"



A. G. A. approved for all types of gases.

FEATURES: 33 sq. ft. of heating surface in the 125,000 BTU model. New type burner gives maximum efficiency — is adjustable and replaceable. Heat exchanger is specially rolled of heat-resistant steel. New Basoid valve with line voltage Solenoid and 100% safety shutoff. Wall type Minneapolis-Honeywell thermostat. Powerful, silent fan has 16" blades. Case is 24-25 gauge Paintlock enameled steel.

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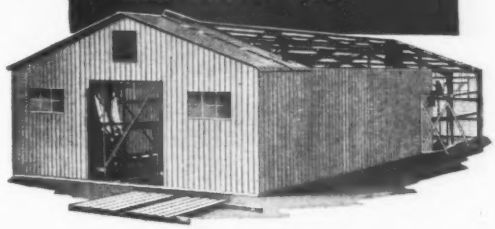
Bolted Construction

Means Greater Strength
Greater Rigidity
Lower Cost



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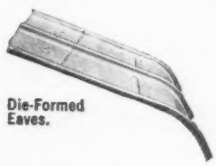
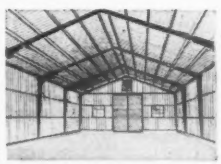
First Rigid Frame Truss-Clear Design To Be Mass-Produced

One-Piece Roof Ridge Sheet.


Die-Formed Eaves.



Secure, strong fastening of metal to metal is best accomplished with bolts. That's why Butler buildings rely solely on bolts (inserted, *not driven*, through precision-punched holes) to hold aluminum sheets together and to hold these sheets securely to the steel building frame. There is no rupture or tearing of sheets—there are no loose rattling sheets to leak and reduce the service life of buildings and increase costs of upkeep.

4 ADAPTABLE SIZES. 50 ft. and 40 ft. width, length in any multiple of 20 ft. Also, 20 ft. and 32 ft. widths, lengths any multiple of 12 ft.

60 ft. width available in Bowstring Truss type.

OTHER BUTLER FEATURES:

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- Special deeply corrugated aluminum sheets.
- Width, Length, Height Variable.

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GENERAL PAINT CORPORATION: San Francisco, Los Angeles, Portland, Seattle, Spokane, Tulsa — plus factory-branch warehouses throughout the West and Southwest. See your telephone directory.

THE WEST ON ITS WAY

(Continued from page 83)

NEW AUTO APPEARS—The first of a revolutionary new automobile, the Mustang, is being exhibited in Seattle. It was designed by Roy McCarty, Seattle garageman, and was assembled at Renton. The aluminum body was built by Pacific Car & Foundry Co., Renton, but other parts are standard and were built elsewhere. The engine, a four-cylinder Hercules, is under the center of the car. The driver sits out front. The Mustang seats six and will sell in Seattle for $1,235, plus taxes.

FUME CONTROL MAPPED—An expenditure of more than $1,000,000 is being made by Aluminum Company of America to control fumes at its Vancouver plant, C. S. Thayer, works manager, announces. Farmers have contended the fumes affect their crops and cattle. Hoods are being placed over aluminum pots to collect the fluorides, and fans, ducts and washing towers are being added to purify the air before discharge.

OYSTER FIRM PURCHASED—Ingham & Reed Oyster Co., Seattle, purchases Olympia Oyster Co., Olympia. The purchase includes a processing plant, and the new firm, formed by several executives of Simpson Logging Co., Shelton, Wash., plans to step up production.

CENTENNIAL EXPANDS—Centennial Flouring Mills Co., Seattle, acquires 11 grain elevators and two feed manufacturing mills from the Missoula Mercantile Co., Missoula, Mont., Moritz Milburn, Centennial president, and Walter McLeod, Missoula Mercantile president, announce. The properties, units of Missoula's feed and grain divisions in Missoula, Bozeman and other Montana cities, will be operated by Centennial under lease for five years with option to buy, it is stated. W. C. Theda, former manager of Centennials' Tacoma mill, will be manager of the new properties for Centennial, assisted by Charles Quinn of Missoula Mercantile, and Pat Webster of Centennial. The mills will continue to manufacture Misco Brand feeds.

PERMANENTE LABORATORY NEARLY READY—Final touches are being put on the new research laboratory of Permanente Metals Corporation at Trentwood, near Spokane, and scientists under direction of Dr. Paul P. Zeigler will begin the search for new uses of aluminum. Two fields will be explored, according to Dr. Zeigler—fundamental problems of aluminum production, and development of new products and their application.

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SIZES, TYPES and QUALITY for EVERY DUTY

FRENCH & HECHT
DIVISION
KELSEY-HAYES WHEEL COMPANY
DAVENPORT, IOWA
Wheel Builders Since 1888

FIRM BUYS PLANT—Gordon-Ladley Plywoods Products Company announces purchase of the Donover Lumber Company plant at Whites. The firm will process green veneer produced at the new plant on Vance Creek west of Elma, Wash., into finished plywood at the Whites plant.

WYOMING

WOOL PROJECT STUDIED—Establishment of a wool processing industry in Wyoming is being studied by a Wyoming committee following discussion of the project by Wyoming representatives and A. J. Rosenstein of Unionville, Conn., president of the Redstone Textile Company. Mr. Rosenstein discussed a $2,000,000 processing industry proposal with the Wyoming Wool Council at Casper, Wyo., and appointment of the committee followed. The eastern mill operator indicated his firm will subscribe approximately $485,000 toward the project. Wyoming would draw wool for processing from Montana, Colorado, Utah and Nevada under the proposal.

GAS PRESSURE PLANT—General Petroleum Corporation has a new $700,000 pressure maintenance plant under construction at its Sand Creek, Washakie County, field in north central Wyoming, 17 miles from Worland, to increase oil recovery. The plant is scheduled to go into operation in December and will service 11 producing wells, processing about 1,500 cubic feet of gas for each barrel of crude oil which flows to the surface. The gas will be pumped back into the ground to gain maximum recovery of crude oil from the field.

RECLAIMING BENTONITE—Studies now being made may result in the reclaiming of large quantities of bentonite, a mineral used in oil well drilling. Previously rejected because of certain deficiencies, it has been found that the blue-gray material reaches proper consistency if allowed to oxidize. Wyoming and South Dakota produce two-thirds of the $5,000,000 worth of bentonite mined in U. S.

NEW LARAMIE INDUSTRY—In line with the above paragraph, announcement has been made that a large bentonite processing plant will be established at Laramie. Deposits east of Rock River will be trucked to the plant, which will operate on a 24-hour basis.

RECORD EXPECTED—Unless shortage of steel for pipelines interferes, oil men expect Wyoming to do even better than before in contribution to the nation's oil reserves. Of 411,665,000 barrels of oil added to reserves in 1947-48, the state of Wyoming accounted for 255,285,000 barrels.

ONLY PLASTICS PLANT OF ITS TYPE ON THE WEST COAST!

Want *prompter deliveries* of laminated plastics? Order from Taylor Fibre at La Verne, California . . . the only plastics plant of its kind in the West. Save precious days in shipping time. You can count on us for on-schedule delivery of all types of Phenol Fibre and Vulcanized Fibre.

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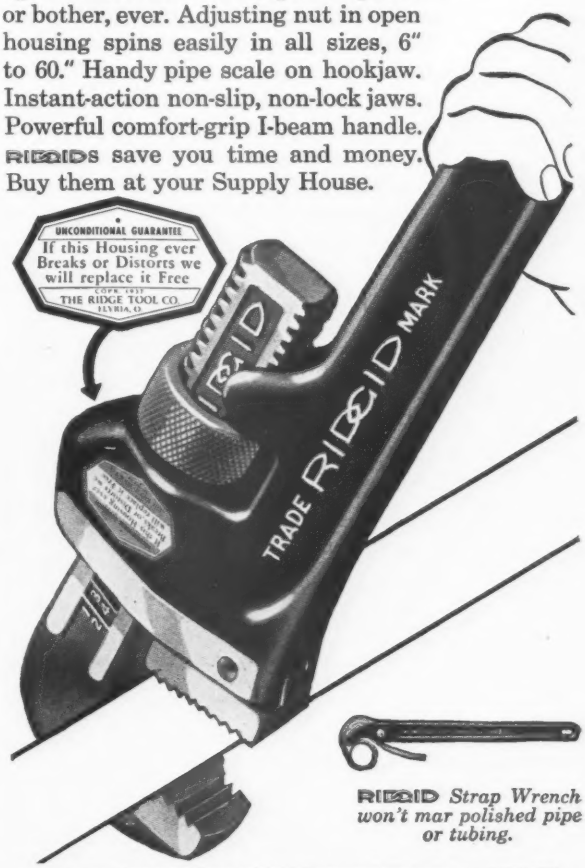
This Trouble-Free PIPE WRENCH Saves You Money

RIDGID Wrenches offer you exclusive advantages that save time, work and cash

● The important work-saver features which have made RIDGID the outstanding choice of pipe experts all over the world mean fast easy work and real economy for you. Housing is guaranteed against breakage or distortion—no repair expense or bother, ever. Adjusting nut in open housing spins easily in all sizes, 6" to 60." Handy pipe scale on hookjaw. Instant-action non-slip, non-lock jaws. Powerful comfort-grip I-beam handle. RIDGIDs save you time and money. Buy them at your Supply House.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If this Housing ever Breaks or Distorts we will replace it Free
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RIDGID
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RIDGID *Strap Wrench won't mar polished pipe or tubing.*

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WORK-SAVER PIPE TOOLS
THE RIDGE TOOL COMPANY • ELYRIA, OHIO

WESTERN TRADE WINDS

NEWS ABOUT THOSE WHO DISTRIBUTE AND SELL INDUSTRIAL EQUIPMENT AND MATERIALS

W. C. Winterhalter named sales manager of newly-established Pacific Coast Division of Owens-Corning Fiberglas Corp. **D. R. Dyas,** Los Angeles; **H. B. Little II,** San Francisco; **E. N. Still,** Seattle, and **J. A. Tallman,** Portland, will manage branch sales offices. **Walter D. Gipe** will transfer from Toledo as administrative assistant to **Ben S. Wright,** Fiberglas general sales manager, to become service mgr.

L. G. Maechtlen

L. G. Maechtlen has been named general sales manager of Square D Company, Western division. He joined the company as an engineer following his graduation from Cal Tech in 1926.

P. R. Baus appointed manager of new Hollywood branch office of Jack & Heintz Precision Industries, Inc.

William F. Roberts appointed manager in charge of plastics of Monsanto Chemical Co., Los Angeles, transferring from Springfield, Mass. He has been associated with the plastics division since 1925. **Jonathan H. Sprague, Jr.,** has been named technical representative of Monsanto in Washington.

R. H. Proctor advanced to West Coast divisional manager for the Chrysler Marine and Industrial Engine Division, headquarters San Francisco. **R. L. McRae** appointed representative, Northwest Coast territory, headquarters, Seattle, and **D. D. Chene** named representative, Southwest Coast territory, operating out of Los Angeles.

W. L. Stuttaford, formerly Coast division sales manager for Nestles, appointed vice-president and general sales manager of Tea Garden Products Co., San Francisco.

John R. Ford appointed manager of the newly-opened Seattle office of the Elevator Division, Westinghouse Electric Corporation. He attended Oregon State College and California-Aero Technical Institute, served in the Air Corps, and joined Westinghouse in 1946.

F. A. Maskell appointed sales representative of the New York Belting & Packing Co., Passaic, N. J., covering Colorado, Utah, Arizona, and New Mexico.

Herman C. Phelps, formerly All-State Welding Alloys Co., Inc., West Coast regional sales manager, Seattle, has moved to White Plains, N. Y., as national sales manager.

Electric Products Company of Cleveland, Ohio, appointed Hubert Kaub and Company, Denver, Colo., as agents covering Colorado, Wyoming, Utah, New Mexico and El Paso County, Texas. The principals are **Hubert Kaub** and son **George.**

Grover Wilson, former sales manager of the Spokane division of Zellerbach Paper Company, has been promoted to division manager, succeeding **A. G. Mohn,** who asked to be relieved of the active management. Mr. Mohn will act in an advisory capacity to Mr. Wilson, who joined the firm upon his graduation from Washington State College in 1931.

W. W. Bracken named field supervisor of Flood-Lite Division of S. & M. Lamp Company.

H. A. Johnson appointed San Francisco supervisor of the Agency and Specialties Division activities (except X-ray sales) in the San Francisco area for Westinghouse Electric Corp.

Burgan Machinery Company, 9527 Fifth Ave., Inglewood, Calif., reaffirmed by the Cleveland Tapping Machine Company, Hartville, Ohio, as sales representative in California, Arizona and Nevada.

Star Machinery Company, 1741 First Ave. South, Seattle 4, Wash.; East 415 Sprague Ave., Spokane 8, Wash.; and 801 S.W. Front Ave., Portland 4, Ore., reaffirmed to handle sale of Cleveland standard and special precision production tapping machines in Washington and Oregon.

Hercules Equipment and Rubber Company, Inc., San Francisco, one of the world's largest rubber industrial products distributors, celebrates 25 years' business association with The B. F. Goodrich Company. The occasion was commemorated with the presentation by **Harland B. Lane,** district manager of the San Francisco Industrial Products Sales District of Goodrich, of a plaque to **P. M. Paulsen,** president of Hercules Rubber.

• Tri-State places first order with Du Pont

Tri-State Supply Corporations, 544 S. San Pedro St., Los Angeles, and **E. I. Du Pont de Nemours & Company** executives are shown above as first order for Tri-States' new line of insulating varnishes, enamels and sealers was signed. Du Pont will manufacture products to Tri-State specifications and Tri-State will distribute under own brand name of "Tri-Var." From left to right, executives are **G. A. MacDonald,** Du Pont's West Coast manager of industrial sales; **Fred J. Emig,** Du Pont's insulation specialist, Chicago; **C. F. Bowers,** Tri-State president, and **Max Sommer,** Du Pont's southern California representative of the Industrial Finishes Division.

Francis S. Howard

Francis S. Howard named division vice-president, Southern Sales Division for Columbia Steel Company, a U. S. Steel subsidiary, succeeding **Carl H. Wittenberg,** resigned. He has been vice-president of Consolidated Western Steel Corp., newly-acquired subsidiary of U. S. Steel Corp. Howard started as a shipping clerk with Western Pipe and Steel Company of California.

Ralph W. Seely appointed vice-president of Consolidated Western Steel Corporation in charge of sales at Los Angeles, succeeding **Francis S. Howard.**

Hagan Corporation, combustion and chemical engineering firm, transfers San Francisco offices and laboratories to new quarters in the Manufacturers' Agents Exhibit Building, 200 Davis St., San Francisco 11. The new facilities will be used jointly by Hagan Corporation and subsidiaries.

I. G. Ross appointed general sales manager of John Bean, Western Division, Food Machinery and Chemical Corp., San Jose, succeeding **Ralph W. Cook,** resigned. Ross has been sales supervisor since 1944. He was formerly with John Deere Company and an Army-Navy instructor at the Oakland air base.

Hugh A. Dewar appointed Pacific Coast sales manager for Pole Line Hardware Division of Oliver Iron and Steel Corporation. He was formerly district sales manager with headquarters Los Angeles.

Karl H. Kaye, president, Pacific Wire Works Company, 4515 Sixth Ave. So., Seattle, announces opening of new company offices in Suite 847, Pittock Block, Portland, with **Fred C. Ehlen** as local manager.

J. M. McLain appointed district sales manager for The Thew Shovel Co., power crane and shovel manufacturer, Loraine, O., for Pacific Coast territory with headquarters in San Francisco.

Hewitt Rubber Div., Hewitt-Robins Inc., Buffalo, appoints Industrial Supply Co., 1647 N. Second St. Albuquerque, N.M., as distributor in New Mexico area. Industrial carries a complete stock of Hewitt hose and belting. **Dan DaMant** is president of Industrial Supply and **Mark Crawford,** vice-president.

Hydraulic Power Equipment Co., Portland, Ore., appointed distributor for industrial tube fittings, valves and associated equipment manufactured by The Parker Appliance Co., Cleveland. Hydraulic Power Equipment, operated by C. T. Fisher and W. W. Hickman, will stock Parker products for service to manufacturers in Oregon and will be available for application engineering consultation as well.

American Brass & Copper Co., Oakland, and **Western Metals & Supply Co.,** San Diego, appointed Reynolds aluminum products distributors.

Idaho Machinery & Supply Co., Wallace, Idaho, named dealer for Allis-Chalmers line of Texrope drive equipment in Kootenai county. **R. B. Bill** is president and **Darrell F. Broderick** manager.

J. E. Badgley, former district manager of sales for King Publications in Los Angeles, has accepted the position of sales and public relations manager for Silver Booster Manufacturing Co., Burbank.

C. M. Thomsen

G. R. Wynne

C. M. Thomsen, service manager for White Motor Co., San Francisco, becomes bus service engineer in the San Francisco Coach Division, and **G. R. Wynne,** shop superintendent of White's Portland branch, takes over as service manager, San Francisco. Thomsen has been connected with White's Pacific Coast operation since 1926. Wynne has been shop superintendent at Portland for the past year and a half.

United States Steel Supply Company soon will serve Northwest steel users from warehouses in Portland and Seattle, L. B. Worthington, president of U. S. Steel's warehousing subsidiary, announces. Columbia Steel will transfer its Portland and Seattle warehouse plants to the supply company. **Clifford W. Lord** will be district manager of the two warehouses and retains general supervision of warehouses in Los Angeles and San Francisco.

George L. Cobb

George L. Cobb selected as district sales manager for Soule Steel Company, headquarters San Francisco. He will have charge of sales in Northern California and Nevada. A graduate of the School of Engineering, Stanford University, he has been with Soule 14 years. He has been sales engineer and advertising manager.

Patrick G. Train has been appointed sales manager for Architectural Porcelain Constructors, Oakland manufacturers of porcelain enamel for home and commercial construction. He was formerly general sales manager, Lorentzen Co., Oakland.

Kennametal, Inc., Latrobe, Pa., announces appointment of **Carroll Edgar** as a representative in the Seattle area with headquarters 2727 First Avenue, South.

Robert Koenig appointed as service engineer for the Denver office of Brown Instrument Company, division of Minneapolis-Honeywell Regulator Co.

Harold Gearin joins sales staff of Fluor Corp., Ltd., constructors and engineers. He will shortly assume responsibility of sales coordinator among the company's various district offices on refinery and other construction projects. Mr. Gearin was previously with Shell Oil Company and Bendix Aviation Corporation in executive sales positions.

Chemical Exposition

The second Pacific Chemical Exposition by the California Section of the American Chemical Society for 1949 has been set for November 1 through 5 at the San Francisco Civic Auditorium. As in 1947, the Pacific Industrial Conference will run concurrently with the Pacific Chemical Exposition.

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Reading Guide For Western Management

A service for all management levels . . . current literature surveyed and appraised by the faculty of the School of Management, Golden Gate College

Business Organization And Management

By Elmore Peterson and E. Grosvenor Plowman. Richard D. Irwin, Inc., Chicago, 1948, $5.00.

This is a revision of a book originally published in 1941 and it may be said that the revision is a marked improvement. As the authors themselves recognize in the Preface—". . . its subject matter is presented more logically and clearly. . . ."

Both critics of management and critics of education agree on one thing: that practical business executives and educators in the field of business should get closer together, should get to understand each other better. This is one of the few books in the field of management which reaches this ideal: Elmore Peterson is Dean of the School of Business of the University of Colorado; Grosvenor Plowman is the vice-president in charge of traffic of the United States Steel Corporation of Delaware. The former has had long and successful experience as a business educator; the latter is an outstanding and successful business executive who is not only a recognized author in the field of management organization but is also one of the country's leading authorities in traffic management and transportation.

This work represents another outstanding exception to usual practice: while set up primarily as a college text, it is one of the few books in this field that can be of real value to practical executives as a management handbook. Thus, several parts of it are of continuing value to management in meeting perennial and perplexing management problems.

An example of this is the problem of responsibility and authority. While a great deal has been written, no discussion of this topic is more informative than that in Chapter VII, "Authority, Responsibility, and Accountability."

Likewise, business executives are always confronted with the question of the right number of levels of management to direct and control a particular function. Chapters IV-VII discuss each level of authority, from the board of directors to front-line management.

If there is one outstanding contribution to management thinking represented by this book, it is the discussion in Chapters VIII and IX pertaining to departmentation in business and the standards which should be used in combining or separating certain functions. The writer knows of no other source so comprehensive for this important and useful information.

In addition, the important and usually neglected problems of policy formulation and the centralization or decentralization of functions are presented in a usable and practicable fashion.

A criticism of the book is that it looks so much like a college textbook that it may frighten many business managers. But if this minor defect is overlooked, many management men will find therein information that will help with the answers to recurrent problems of management organization. No other work in this field approaches this standard of usefulness.

Reviewed by:
J. M. TRICKETT
Dean, School of Management
Lecturer in Management Organization

Unions, Management And the Public

By E. Wight Bakke & Clark Kerr. Harcourt, Brace & Co., New York, 1948, $5.00

Professors Bakke and Kerr have assembled in this volume a wide variety of readings in labor and management problems. Conceived originally as a source book for students, the book in its present form should be useful to leaders in management and unions.

The editors are particularly well fitted for their task of winnowing the wheat from the chaff in the vast literature of union - management relations. Professor Bakke is director of the Labor and Management Center and Sterling Professor of Economics at Yale; Professor Kerr is well known on the West Coast and nationally as director of the Institute of Industrial Relations and Professor of Industrial Relations at the University of California, Berkeley.

The editors have garnered and sorted into logical order over 250 readings which lend themselves to reprinting in an anthology of this kind. Many discussions which they wanted to include were regretfully omitted because they were too long or because they did not fall within the framework of topics adopted by the editors.

A nice neutrality is maintained by the authors. As they point out in their Preface: "The selections have been made not to support the editor's personal conclusions but to provide the stimulus and essential information for discussion of the problems which need appraisal before the issues of the labor problem can be resolved in the public interest."

Consequently, you will find Clarence Randall cheek by jowl with Sidney and Beatrice Webb and Charles Luckman keeping company with Samuel Gompers. Over 170 authors are represented. In arranging these varied selections so that they have form and pattern, Bakke and Kerr have accomplished a minor editorial miracle. Five main sections serve as focal points: I. *Sources of the Union Movement;* II. *Response of Management;* III. *Collective Bargaining;* IV. *Terms of the Agreement;* and V. *The Interest of the Community.* Further sub - groupings are skillfully worked out. For example, under Collective Bargaining, "Bargaining Processes and Procedures" are discussed, followed by a section on "Resort to Force," "Conduct of Strikes," and "Alternatives to Force."

The book is provided with an index of authors and a good working index of subject matter.

A collection of this kind is invaluable as a reference book, though not the sort of book one would read from cover to cover. It is a bountiful smorgasbord rather than a five-course dinner. To see opposing viewpoints set side by side is bound to sober the reader and lead him toward a greater tolerance and a more open-minded evaluation of the basic issues in labor-management relations.

For it is useful to be reminded that there are two sides to every vital question, lest we fall into the overly-rigid state of mind of the open-shop advocates described by Mr. Dooley (yes, he's in this book, too!):

" 'But,' said Mr. Hennessey, 'these open-shop min ye menshun say they are f'r unions if properly conducted.'

" 'Shure,' said Mr. Dooley, 'if properly conducted. An' there we are: an' how would they have them conducted? No strikes, no rules, no contracts, no scales, hardly iny wages, and dam' few mimbers.'"

Reviewed by:
RUSSELL T. SHARPE
Lecturer in Personnel Administration

Briefer Guides From The Management Library

Purchasing for Industry

National Industrial Conference Board, Studies in Business Policy, No. 33, 1948 (pamphlet).

This study reviews the purchasing policies and practices of nearly three hundred representative companies, and describes in detail the organization and operation of purchasing departments in six leading manufacturing concerns.

Recent Trends in Personnel Selection and Induction

By Spriegel & Wallace. An article in *Personnel*, September, 1948, p. 77.

Based on a survey of 325 firms, this article brings to light significant trends in company selection, placement, and induction practices. Recent changes are highlighted by a comparison of the results of this survey with two earlier investigations.

Management Procedures in the Determination of Industrial Relations Policies

By H. Baker. Industrial Relations Section, Princeton University, 1948 (pamphlet).

Based on information gathered from 84 companies, this report considers the allocation of responsibility for final decisions on major personnel policies and the procedures followed in their formulation.

Reviewed by:
BERNA M. CARLSON
Management Librarian

HELPFUL LITERATURE

For the plant operator who wants to keep informed

2461-L

How to Select a Press is explained in a 20-page bulletin released by *Verson Allsteel Press Co., Chicago,* as a ready guide to help press users determine what type of press is most suitable for their specific job requirements and what methods of power application are most efficient. Covered are single, double and triple action mechanicals and hydraulics, open back inclinables, post type hydraulics, knuckle joint presses, forging presses, high-speed - high production models and fully automatic transfer feed presses, with charts and formulae for figuring pressure requirements, and a ready reference table for determining slide velocities.

2462-L

Combustion Test Sets—Applications of their line of combustion test sets is described in a new bulletin (No. 220) published by the *F. W. Dwyer Manufacturing Co., Chicago.* The sets are for use with gas, oil or stoker type of heating installations, and consist, basically, of a new style CO-2 indicator, a small precision draft gauge and a pencil-type stack thermometer. Also discusses a new smoke gauge manufactured by Dwyer that provides an actual sample of the smoke being tested.

2463-L

Stainless Piping Systems — "Taylor Forge Stainless" provides a new and more economical approach to flanged piping, which the manufacturers report to have decided advantages. Four-page, illustrated bulletin includes drawings, dimensions and prices of new type fittings and flanges, available in Stainless 304, 347, 316 and other materials. *Taylor Forge & Pipe Works, Chicago, Illinois.*

2464-L

"Zero Precision" Tools—A new 15-page catalog put out by *Sheldon Machine Co., Inc., Chicago, Ill.,* describes, illustrates and gives detailed specifications for the first time of the new post war Sheldon and Sheldon-Vernon machine tools, accessories and attachments.

2465-L

Topflight Tape—An opaque cellophane tape, self-adhesive, comes in a variety of bright background colors, printed with your advertising message. Its uses in promoting, for instance, television in Buffalo, New York, and in Maryland providing warning labels for small tools, are described in an eight-page booklet showing the tape in color, put out by the makers, *Topflight Tape Company, York, Penna.*

2466-L

Steel Plant Described—*Joseph T. Ryerson & Son, Inc.,* have published a 12-page illustrated booklet telling the story of their new San Francisco Bay Area steel-service plant in Emeryville, California. This Bay Area plant, which is as new as March, 1948, is functioning smoothly in producing the steel products described in the booklet: bars, plates, structurals, sheets, tubes, etc. The booklet also touches on this century's developments at Ryerson and in the steel service industry in general.

2467-L

Pallet Loader Bulletin—A machine called the Automatic Pallet Loader receives the material to be palletized at one end, from a conventional conveyor system, and ejects the material at the other end, fully loaded on the pallet. Each step of its operation is illustrated and described in a four-page bulletin put out by its maker, *Lamson Corporation, Syracuse, New York.*

2468-L

Brushes For Small Motors—Selecting and applying the right kind of brush on a wide variety of small-motor equipment is described in a 44-page catalog put out by the *Stackpole Carbon Company, St. Mary's, Pa.,* with particular attention paid to brush problems and their remedies for universal motors, automotive generators, automotive starters, aviation generators, single phase motors. The catalog is available to brush users writing on their company stationery.

2469-L

New Relay Catalog—The comprehensive 48-page catalog just issued by *Advance Electric and Relay Co., Los Angeles, California,* supersedes the one published in January of this year. It contains detailed drawings, descriptions, prices of the entire Advance relay line, which includes all types of large and small industrial relays, as well as a new hermetically-sealed type especially useful for aircraft or under exacting atmospheric conditions.

2470-L

Stitching With Metal—In a new eight-page booklet, "Metal Stitching," *Acme Steel Company, Chicago, Illinois,* illustrate the method of stitching metal and non-metallic materials as an alternative to using rivets, screws, bolts or spot welding. The complete line of stitching machines is shown as well as specifications and a few of the many stitchable combinations.

2471-L

Solder Selection Guide—*Alpha Metals, Inc., Brooklyn, N. Y.,* have issued a four-page catalog describing the various uses of each of their particular lines of solder. On the back of the catalog is a very useful set of tables, among them a solder selection guide for the sixteen metals that are most frequently soldered.

2472-L

Management Case-Histories — Production executives, personnel directors and office managers should be interested in a checklist of 61 studies made by the *American Management Association, New York, N. Y.,* providing information on increasing employee productivity in factories and offices. Among the publications offered are actual case histories, as well as analyses and recommendations by nearly 200 experts on productivity. The AMA call their checklist, "Increasing Productivity in Factory and Office."

2473-L

Conveyor Booklet — The advantages of all-aluminum conveyors are described in an illustrated pamphlet put out by *Mercury Conveyor, Inc., Hillsdale, New Jersey,* which also gives engineering data and specifications for the conveyors, described as being especially useful to industries, such as food processing, where immaculate cleanliness and ease in washing are essential.

2474-L

"Millions For Tribute" is the title of a new booklet issued by *Dravo Corporation, Pittsburgh, Pennsylvania.* The "millions for tribute" is the money paid out annually by American businessmen for losses incurred on exported goods improperly packaged. The booklet describes the advantages of the Transportainer, a steel shipping container especially designed for the protection of perishable or breakable cargo.

2475-L

Pipe and Fittings Catalog—*National Carbon Company, Inc., New York, N. Y.,* have just issued their Catalog Section M-88003, which describes and contains engineering information on pipe and fittings made out of their material, "Karbate," which, they say, resists the action of most acids, alkalies and other chemicals which are not highly oxidizing in their behavior. It may be used under conditions which keep the temperature in the body of the material below 338 deg. F. (17 deg. C.), and resists thermal shock, is light in weight and has good mechanical strength.

2476-L

Non-inflammable Paint Remover Explained —When a wave of tragic industrial and institutional fires caused an upsurge of interest in paint removers that did not burn or explode, several were invented; however, since most of them were in liquid form, they could not be used except on horizontal surfaces where they can attack the paint film before running off. *The Savogran Company, Boston, Mass.,* however, have invented a non-inflammable paint remover that comes in a heavy cream form, enabling it to be used on upright or even overhead surfaces without running or dripping. Its further virtues are described in a technical bulletin put out by the manufacturers.

2477-L

What's New in Welding—Handsomely illustrated with a great many full-color industrial photographs as well as a profusion of black and white ones, the new 39-page catalog issued by *Victor Equipment Company, San Francisco,* should make a very useful addition to the reference library of any plant man in whose life welding is a factor. The catalog contains complete information on the various types of Victor gas welding and flame cutting equipment. It has a welding tip selection chart in the rear and a table of contents page, and is punched for binding in a loose-leaf folder.

2478-L

Catalog Describes Latex Wire — *United States Rubber Company, New York, N. Y.,* describe their line of latex insulated building wires and cables in a 20-page catalog which details performance characteristics, details of construction and specifications for the company's full line of armored cables, service entrance cables, non-metallic sheathed cables and its new building wire designed specifically for use in wet locations. The catalog will be of interest to electrical and building contractors, architects and engineers.

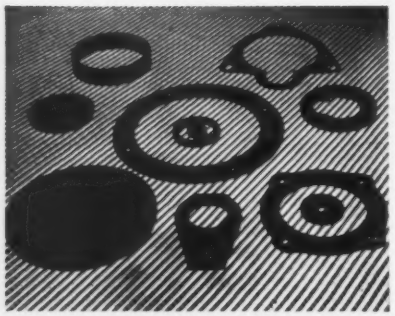
2479-L

Dock to Dock delivery of materials is accomplished through the use of Whiting Cross-Over Bridges, described in the new bulletin, MS-C-400, of *Whiting Corporation, Harvey, Illinois.* The bulletin describes how the movable bridges, originally designed for use by railroads at freight terminals, are beginning to be adopted by industry to eliminate track bridging equipment and costly car spotting to make doors adjacent.

NEW METHODS, MATERIALS, EQUIPMENT

That Will Help to Cut Your Production Costs

838-M



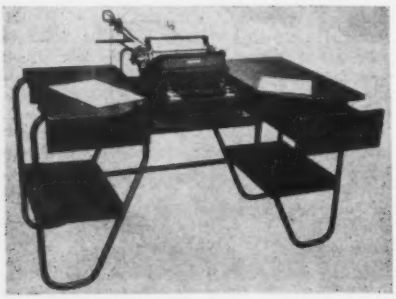
Punched, Extruded Gaskets Made of Rubber

A standard line of punched or extruded lathe-cut rubber gaskets, washers and sleeves, put out by the *Stalwart Rubber Company, Bedford, Ohio,* is made from synthetic rubbers like Buna S, Neoprene, Butaprene and Thiokol and from natural and reclaimed rubbers. The manufacturers claim that, although rubber gaskets, washers and sleeves are nothing new, this is the first time they have been made available in such a wide range of various rubbers, and they have a wide application in automotive, plumbing, electrical and other general manufacturing fields.

839-M

Business-Machine Stand Made of Steel

A non-wobbling stand for business machines and typewriters is a great comfort to office workers. Constant vibration and movement distracts their attention from their work, making them inefficient and

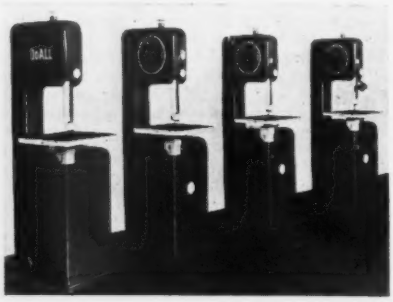


jarring the parts in the machine itself. The construction of the new business-machine stands put out by the *Meilink Steel Safe Co., Toledo, Ohio,* of heavy gauge tubular steel with all-welded joints, provides for rigidity, free from vibration, and eliminates bolts or sharp corners that might injure operators or clothing. Units are designed specifically for continuous-forms, correspondence - writing, long - carriage typewriters, duplicating or mailing machines, either electric or manual. They come in black, grey or green finish.

840-M

Variety of Sawing Units In New DoAll Series

A sawing machine that can be converted to handle any sawing operation by addition of accessories and refinements is featured by the DoALL Company. The "New Baby" is a popularly priced 16-in. convert-



ible model that permits the purchaser to order only as much saw as he wants or as circumstances permit. As business warrants, he can convert the unit to meet new demands. The illustration shows DoALL's basic Type HS at the left. Other units are the same model showing progressive stages through which it can be equipped for sawing, filing and polishing operations.

841-M

Plants Steam-Cleaned With 'Steam-Jet'

A portable, all electric industrial steam cleaner, made by a New England manufacturer of electric steam boilers, *Livingstone Engineering Company, Worcester, Mass.,* delivers steam at desired rate and pressure to its cleaning nozzle where a soap solution, solvent or detergent is added, merging with the high pressure steam playing on the surface to be cleaned. The unit weighs about 400 pounds and is mounted on an all-steel dolly with ball-bearing rubber-tired swivel casters. It is recommended for all kinds of sterilizing and cleaning jobs around the plant, and can even be used around gasoline, as it is non-inflammable, unlike the old-type steam cleaners.

For Your Convenience . . .

Use this postage-paid card to obtain further information on products mentioned on these two pages and on literature listed on the preceding page. . . .

842-M

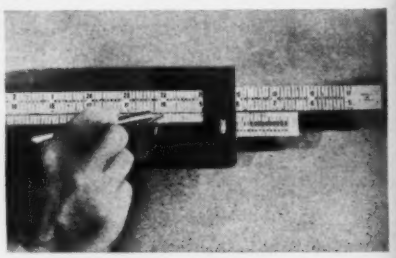
Cocoons for Machines

For "cocooning" battleships, aircraft, vehicles, etc., the armed forces used "Copeel," the preservative put out by *Maas & Waldstein Company, Los Angeles,* which is now available for general distribution. Copeel can be used as either a hot melt or liquid plastic (cold application), can be sprayed or dipped, and quickly forms a tough, protective coating on machinery, equipment, precision parts, etc., that resists water, corrosion, rust, scratching or marring. It can be quickly stripped off, also, if desired.

843-M

New Sliderule Calculator Computes Payroll Time

The Time-Tab is a two-ruler calculator based on the sliderule principle, for the quick figuring of payroll time from time clock, time sheets or timekeeper's records. Made of wood and aluminum, the sliding rules are divided into hourly segments representing a full 24-hour day, to allow for overtime pay reckoning; hours are further divided into minutes, and an entire working day is computed by one continuous operation. Pre-testing of the Time-Tab,



the manufacturers, *Time-Tab, Inc., Los Angeles,* report, in stores, offices and plants, showed much time saved as well as a sharp reduction of the inaccuracies of written or mental calculation. Full weight of the Time-Tab is 40 ounces.

844-M

New Projection Welder Designed

Acme Electric Welder Co., Los Angeles, announces a new projection welder designed for speedy economical operation on light jobs. The welder, designated as Type PT-O, is an air operated, press type, direct action projection welding machine, sup-

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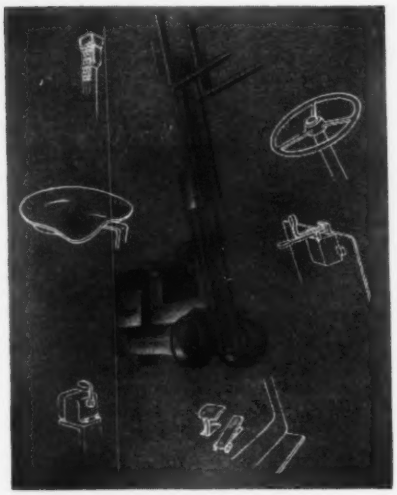
plied in 20, 30 or 40 KVA. Available also are horn adapters and horns to convert for conventional spot welder use.

845-M



Automatic Produces New Electric Fork Truck

The Transrider, put out by the *Automatic Transportation Company, Chicago, Illinois,* is a low-cost battery-operated fork truck distinguished for its maneuverability in small spaces; with a telescopic lift mechanism, the Transrider is able to raise its load to 130 inches, despite having an overall height of only 83 inches for clearance through standard box car and factory doors. White sketches in illustration show, counter-clockwise, high pressure hydraulic lift, seat for driver, forward and reversing lever mounted on the driver's right, steering wheel, lift and tilt control on front panel and automotive type foot brake and accelerator pedal.

846-M

Chemical Fire Guard Gives 24-Hour Protection

At 160 degrees, Auto-O-Jet automatically goes into action with, first, a piercing spray, and then a dense fire-smothering cloud which spreads over an average size room, extinguishing the fire by suffocation. This compact automatic fire control device is only 12 inches long and six inches wide, is made of aluminum and is installed overhead, so that the cloud it forms can settle downward. Inside the aluminum is carbon tetrachloride, hermetically sealed in a glass reservoir, from which spray is ejected under pressure covering a radius of 10 to 15 feet from the unit. It is put out by the *Auto-O-Jet Company of Multnomah, Oregon.*

847-M

New Hard-Boiled Hat Announced by Bullard

E. D. Bullard Co., San Francisco, announces a new plastic molded hard-boiled hat made of entirely new waterproof material. The crown is made up of thousands of long interlocked fibres impregnated and bonded with a resinous binder.

848-M

Flexible Template Duplicates Curves

A new invention to speed up planning work for construction and repair workers in wood, metal, glass, plastics, paperboard, wiring and piping is the Flexible Template, put out by *Philip F. Hartman Co., San Francisco, Calif.* Being flexible, it quickly duplicates curves full size, saving time lost in curve plotting, drafting and template making; also, it can be set or locked to any desired shape or curve and carried from one location to another, making it valuable for construction or checking purposes—it springs back to position when unlocked, ready for re-use. It is available in lengths of one-foot intervals, with the shortest length two feet, and is made of spring steel and aluminum.

849-M

Stainless Steel Welding Electrode

All-State Welding Alloys Co., Inc., of White Plains, N. Y., announces immediate availability through All-State distributors of a new AC or DC stainless steel welding electrode developed especially to weld stainless steel types 301, 302, 304 and 308. All-State announces that the new electrode also shows splendid results for welding high carbon steel to either low carbon or alloy steels. The new electrode is available in a range of sizes.

850-M

Mobile Lube Depot

Bulldozers, cats, cranes and other man-sized machinery are now lubricated right out in the field with the Trail-Luber, a mobile lubrication depot for big machinery put out by *Gray Company, Inc., Minneapolis, Minn.* Included in the machine are a two-compartment hopper for pressure lube and gear lube, two 20-ft. lubricant hoses with suitable adapters, two air-operated pumps. The machine operates on a Briggs & Stratton "A" heavy duty engine, rated 1¾ hp., and comes either skid-mounted, for easy mounting on a platform, or with automotive-type wheels for pulling behind car, truck or tractor.

851-M

New Die Lifters Self-Aligning

The new line of Die Lifters put out by *Modern Collet & Machine Co., Ecorse, Michigan,* consist of (1) a swiveling eye, which accommodates standard lifting hooks and (2) a stud assembly at the bottom, which turns as a unit for attaching and removing the Die Lifter. The stud is quickly clamped at proper depth by turning the round nut inside the eye until the collar at the bottom tightens against the object to be lifted; since the eye swivels freely at all times, the stud cannot work loose. The Die Lifters come in four sizes, with maximum lifting capacities of 16, 28, 40 and 100 tons each, and studs are of ¾", 1", 1¼" and 1½" diameter, with U. S. Standard threads.

852-M

New Corrosion Preventive Method Developed

Announcement is made of the development of a new method of rust prevention through the combined efforts of Shell Development Co., Emeryville, Calif., and Angier Corporation, Framingham, Mass. Shell research developed a new compound, known as VPI, which is a vapor phase inhibitor. Shell licensed Angier to use VPI in manufacture of a paper wrapping material — now being introduced as Angier VPI. Wrapped around ferrous metal parts, Angier VPI gives a maximum of rust-protection, it is announced. Angier Pacific Corporation handles West Coast distribution.

853-M

New Grab Simplifies Handling Unwieldy Items

Cleveland Tramrail Division of The Cleveland Crane & Engineering Co., Wickliffe, Ohio, announces development of a new grab that should prove interesting to those who must store, handle or warehouse linoleum, light metals, tubing and other materials that are long, unwieldy and more or less fragile.

TEHACHAPI TO TIJUANA

(Continued from page 60)

is Detroit, with its fabulous development . . . with less than 2,700 per cent."

Economic age: Somewhere between early manhood and prime of life. Usual signs of complete maturity not yet present. . . . For example, specialization in some particular industry, as Pittsburgh in steel, Akron in rubber, etc. . . . has not yet taken from . . . many fields show further potentialities.

Future prospects: Excellent for the following reasons—

(1) Congestion will not brake development as it has in some other centers. . . . In 1947, Detroit had 1,500 persons per square mile, Chicago 1,300, Los Angeles only 890.

(2) Population should continue to increase . . . the growth of industry itself may operate to attract more people.

(3) Costs of transporting its products are becoming steadily lower, relatively. . . . The West as a tributary market is growing in size. . . . Freight costs have a downward trend. . . . The geographic spread between Los Angeles and outlying markets tends downward.

(4) Cost factors in Los Angeles for both the durable and non-durable industries have been unusually favorable. . . . Non-durable industries have been unusually favorable. . . . Non-durable goods, which were more important before the last war, showed favorable, but deteriorating, cost conditions. . . . Of the two classes, durable goods will grow more rapidly and will further displace non-durables as the more important type of footloose industry.

Dr. Neff sums up his conclusions by making these predictions:

"As this area matures, producers will become further separated from their market. . . . Firms will grow in size, and small ones will become fewer. . . . The labor force will change in character and the services provided to this shifting population by government will be different.

"All these changes are coming," concludes Dr. Neff, "and are being superimposed upon an industrial economy so large that their magnitude and their significance are being obscured."

Steel users in this area can't help feeling a little more optimistic about the outlook on this painful subject, although at the moment there's no tangible relief in sight. U. S. Steel's directors held a board meeting here during the week that Columbia took possession of the former Alcoa aluminum plant at Torrance from War Assets Administration. Alden Roach, former head of Consolidated Steel and a kingfish of wartime shipbuilding, will take over to get the new plant started immediately on its $25,000,000 worth of scheduled improvements. Equipment has been on order for many months and when the mill gets into full operation, at a date now set at 1950, southern California will have its first sheet mill, with capacity of 3,000,000 tons annually of various kinds of cold reduced sheets. Happy natives are reflecting that the processes involved are non-smoke-producing and will not add to the smog.

Less consoling is the sad fact that another year must pass before this proposed sheet can be fabricated into ranges, refrigerators, and auto gadgets, while the steel scrap supply has been far from enough to keep local electric furnaces stocked with a comfortable reserve.

Things are looking up at the port of Los Angeles. Traffic with South America will become a more competitive business, thanks to a precedent-setting decision by the Maritime Commission. By agreeing to subsidize Pope and Talbot in the use of four C-3 passenger-cargo liners in the Pacific Argentine Brazil Line, the Commission for the first time adopted a multiple subsidy plan, although its decision was carefully worded to avoid setting a pattern for other cases.

Recent scheduling of Los Angeles as a port of call by two American President Lines luxury ships provided an example of the local benefits resulting from world trade. More than $2,000,000 a year in new money thus will flow into Los Angeles County coffers, the Chamber of Commerce estimates. More than 120 suppliers, from florists and sporting goods manufacturers to sail makers and diesel engine builders, will be immediate beneficiaries. Oil com-

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It will pay you to consult our estimating engineers

PACIFIC SCREW PRODUCTS CORP.

Largest and Best Equipped Screw Machine Plant in the West

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panies will load nearly $500,000 worth of fuel aboard the two vessels annually.

Plans for a free trade zone where imports from abroad may be re-shipped without duty to other countries, are reported progressing satisfactorily in Washington, giving this area a chance to hold its own with San Francisco, which has a similar undertaking under way.

Long Beach harbor is scheduled to receive the first radar installation of any major U. S. port. A $12,000 contract has been let for a radar screen that will enable the local pilot station to locate incoming vessels and guide them into port by radiophone in the thickest weather. When the Municipal Airport's new "FIDO" system actually begins burning up the fog, this metropolis will be able to make great claims of progress, although just how the presence of the embarrassing meterological phenomenon in the pure air of this climatic capital can be explained to easterners has not yet been divulged.

Now look who's talking! The Los Angeles County Board of Supervisors has just made a horrendous discovery. A keen-eyed member spotted the ghastly fact, buried in a report by the county purchasing agent, that some of the material for building bungalows as emergency quarters for the Superior Court was bought in the black, or gray, market.

Acting in the traditional, fearless American way, the board immediately demanded a probe, which as yet has not brought to public view the name of the gray marketeer.

"Inasmuch as steel was not available from any legitimate source," the purchasing agent's report related, "we had our choice of going to another metal such as aluminum . . . or doing business with a bootlegger of steel. . . . We were very unhappy at the time and will always be unhappy to be forced into the position of dealing with this type of people."

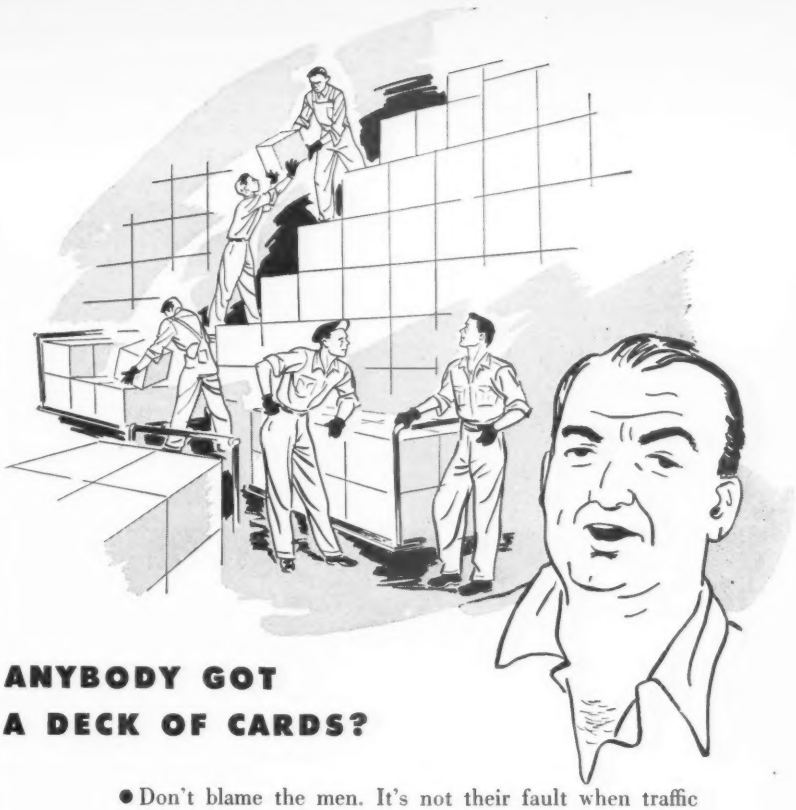
Fruehauf Trailer Sales Corporation Is Formed

Formation of Fruehauf Trailer Sales, Inc., was announced recently by H. C. Fruehauf, president of Fruehauf Trailer Company, during a visit to the Pacific Coast for conferences with R. S. Kirksey, president, and W. J. Pickhardt, general manager, of Fruehauf Trailer Company of California.

It was announced that the new corporation was created for the purpose of financing trailer installment purchase contracts for periods as long as five years.

New Mexico Growth

Present population of New Mexico is in the neighborhood of 667,000, an increase of about 25 per cent since 1940, it is estimated by the Bureau of Business Research of the University of New Mexico.



ANYBODY GOT A DECK OF CARDS?

● Don't blame the men. It's not their fault when traffic gets jammed on a stacking job. It's just one of those things . . . one of those losses that puts a dent in the production-profit curve.

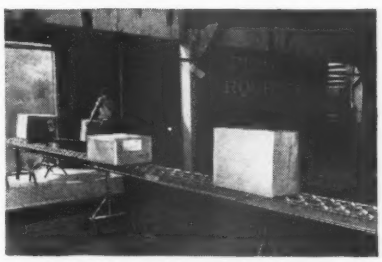
You don't have to take this loss. Two men . . . one at each end of the line . . . can quickly handle an entire conveying and stacking job with *Rapid-Wheel* Gravity Conveyor* and a *Rapid Power* Booster*. And there won't be any traffic jams or slow downs, either. Think what that would mean in your production picture . . . and your profit profile.

Hundreds of things are produced for less today because of Rapids-Standard Material Handling Equipment. We'd like to show you how it can be applied to your business. Write today . . . there's no obligation.

THE RAPIDS-STANDARD CO., INC., 374 Rapistan Bldg., Grand Rapids, Michigan

Your local Rapids-Standard representative is listed in your classified telephone directory.

*T. M. Reg.



IT'S WISE TO CONVEYORIZE

RAPISTAN

MATERIAL HANDLING EQUIPMENT

New Officers of Western Associations . . .

Fred B. Ortman of Los Angeles, president of Gladding, McBean & Co., new president of California Manufacturers Association, succeeding Lloyd A. Johnson, president, National Motor Bearing Co., Redwood City. Other officers include Edgar B. Jessup, president, Marchant Calculating Machine Co., Oakland, first vice-president; R. K. Cutter, M.D., president, Cutter Laboratories, Berkeley, treasurer; and Hayward C. Thomas, president, Alumalux Company, Inc., Glendale, secretary. New directors added include Burton N. Arnds, Sr., president, Sparkletts Drinking Water Corporation, Los Angeles; T. Noel Bland, vice-president, Fibreboard Products, Inc., San Francisco; William A. DeRidder, president, General Metals Corporation, Los Angeles; Leonard K. Firestone, president, Firestone Tire & Rubber Co. of California, Los Angeles; J. A. Folger, president, J. A. Folger and Company, San Francisco; Ralph M. Hoffman, president, Link-Belt Co., Pacific Div., San Francisco; Ivan L. Johnson, president, Pacific Steel Casting Co., Berkeley, and Wm. B. Tyler, vice-president and secretary, California & Hawaiian Sugar Refining Corp., San Francisco.

Independent Petroleum Association of America re-elects C. A. Johnson, of the Holly Development Co., vice-president for southern California, and W. C. Whaley of the Barnsdall Oil Co., executive committeeman. Both are of Los Angeles.

E. Osborn Foster, Capital Fuel, Feed & Seed Co., Phoenix, Ariz., elected president of the newly-organized Arizona Agricultural Chemical Ass'n. A. V. Smith, Pacific Guano Co., Phoenix, is vice-president, and F. W. Harbour, Tovrea Land & Cattle Co., Phoenix, secretary-treasurer. Other directors include Frank M. Feffer, Arizona Fertilizers, Inc., Phoenix, and J. Dwight Hart, Wilbur-Ellis Co., Glendale, Ariz.

Officers for 1949 of the California Fertilizer Ass'n are Earl Mog, Growers Fertilizer Co., Stockton, Calif., president; J. M. Quinn, California Sun Fertilizer Co., Los Angeles, vice-president; Grover Dunford, Inland Fertilizer Co., Los Angeles, treasurer, and Paul Pauly, Pacific Guano Co., Los Angeles, secretary. Oliver E. Overseth is executive sec. and mgr.

Irving Windman, general manager, Windman Brothers, Los Angeles compression molding plant, appointed new technical chairman of Southern California Chapter, Society of the Plastics Industry.

Otis R. Johnson, president of Union Lumber Co., elected president of the California Redwood Association; Fentress Hill, president of Northern Redwood Lumber Co., vice-president, and Selwyn J. Sharp, of the association staff, secretary-treasurer.

Clem Miller of Fisher Flouring Mills, Seattle, is the new president of the Association of Operative Millers, District 9. Francis King of Wallace & Tiernan Co., is the new secretary.

Leon B. Hampton was recently re-elected for a sixth one-year term as president and manager of the Industrial Relations Council of Utah. The new vice-president is Joseph Rosenblatt, manager of Eimco Corp.

Karl L. Kellogg, K. L. Kellogg & Sons, Compton, elected vice-president for California by the American Association of Oilwell Drilling Contractors in annual meeting at Houston, succeeding D. H. Graham, Dunlap & Graham, Long Beach, named director at large. E. C. Brown, Brown Drilling Co., Long Beach, retiring president, becomes a permanent director. Frank Jones renamed California secretary. Five Californians were named directors.

Pacific Logging Congress: president, Robert F. Dwyer, Dwyer Lumber Company, Portland; vice-president, Carl C. Coleman, Kinzua Pine Mills, Kinzua, Ore.; treasurer, L. H. Mills, Mist Logging Co., Portland; secretary, A. Whisnant, Portland.

Paul Learner, Learner Co., Alameda, re-elected president of Northern California chapter, Institute of Scrap Iron & Steel, and Frank Malley, Associated Iron & Metal Co., Oakland, as vice-president. David G. Robbins, Robbins Metal Co., Oakland, newly elected as secretary-treasurer.

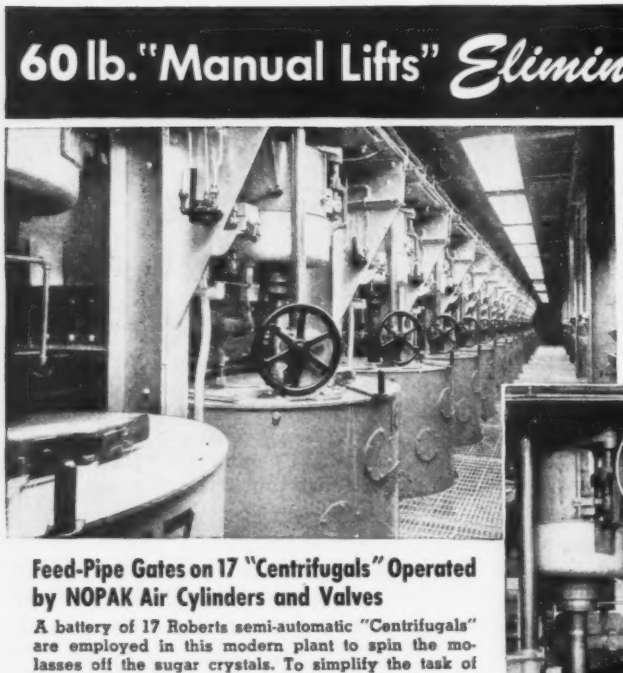
M. G. Sues, president of Sues, Young & Brown, Inc., Los Angeles, elected president of the Pacific Coast Electrical Ass'n. D. D. Smalley, P.G.&E., San Francisco, is new association vice-president.

L. L. Leabo, vice-president of Bay Petroleum Corporation, appointed Colorado chairman of the Oil Industry Information Committee, replacing Roy E. Doty, Denver, who recently became a vice-president of The California Company, Standard Oil subsidiary.

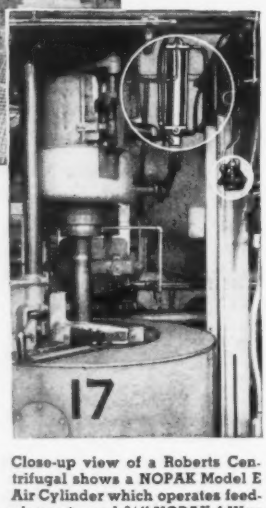
Paul Young, vice-president and general manager of Golden State Co., Ltd., named a director-at-large of the International Association of Ice Cream Manufacturers, Washington, D. C., and a member of the California Dairy Industry Advisory Board.

F. F. Vaughan has been appointed head of the aviation department for General Petroleum Corp., Los Angeles, succeeding W. D. Ellison, who has been named engineer builders' field representative for the Socony-Vacuum Oil Co. in the southern California area.

60 lb. "Manual Lifts" *Eliminated*



Battery of 17 Roberts "Centrifugals," built by Western States Machine Co., installed in new $6,000,000 plant of Holly Sugar Company near Brawley, Calif.



Close-up view of a Roberts Centrifugal shows a NOPAK Model E Air Cylinder which operates feed-pipe gate, and ⅜" NOPAK 4-Way Valve which actuates cylinder.

Feed-Pipe Gates on 17 "Centrifugals" Operated by NOPAK Air Cylinders and Valves

A battery of 17 Roberts semi-automatic "Centrifugals" are employed in this modern plant to spin the molasses off the sugar crystals. To simplify the task of charging each centrifugal, the feed-pipe gate . . . which formerly required an awkward, manual lift up to 60 lbs. every 4 to 6 minutes . . . is now raised by the flick of a NOPAK Valve lever which controls a NOPAK Model E, 4 x 13" Air Cylinder.

In a normal 8-hour working day, over 1600 manual lifts of 60 lbs. each are eliminated. Machine operators are relieved of unnecessary strain and fatigue, and machine efficiency is maintained at the high level characteristic of this new $6,000,000 plant.

NOPAK Valves and Cylinders can help you achieve higher efficiency in your plant, or in your product.

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PACIFIC COAST REPRESENTATIVES

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Traffic Man Tells Views on Containers

Shippers should be encouraged to provide an adequate container that will withstand ordinary transportation handling, and should not be penalized in doing so, in the opinion of Irving Lyons, traffic manager for the California Packing Corporation, San Francisco, voiced in a San Francisco address.

"Where the shipper takes the extra precaution to provide a container that he believes is of the necessary strength and weight to minimize loss and damage in transit he should at least be rewarded to the extent that his freight charges would be computed on the same basis as those of a competitor who uses a cheaper and lighter container," he said.

Lyons believes that adequate containers are no more expensive than poor ones, especially when consideration is given to the value of good will, fewer claims, and complete satisfaction of consumers.

Iron Ore Deposits Found in Labrador

High-grade iron ore deposits have been discovered in Labrador on the Quebec-Labrador boundary which may rival the Mesabi range in the United States, according to a description by Gilbert C. Monture, chief of the mineral resources division of the Canadian Department of Mines and Resources in a study prepared by the National Industry Conference Board.

Drilling has proved approximately 150,000,000 tons of ore but the objective is to prove 300,000,000 in order to warrant building of a 350-mile railroad to the deposits.

25% of All Airmail

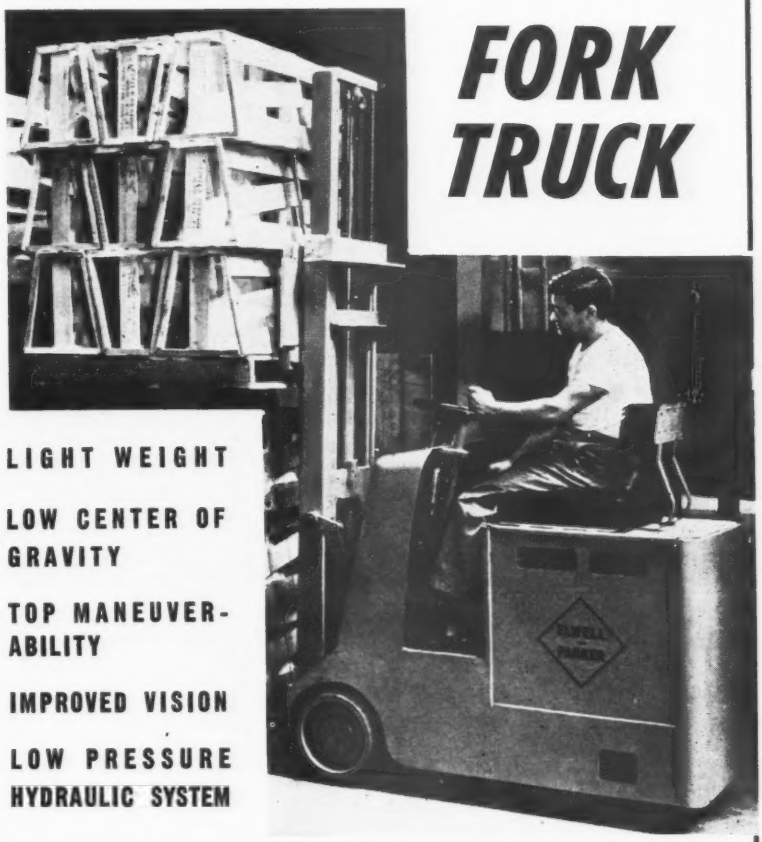
Los Angeles and San Francisco alone account for nearly one-quarter of the domestic airmail revenue of the nation's 18 largest cities, the California Aeronautics Commission reports. Although representing only 9 per cent of the 18 cities' total population in 1940, the two California cities did 24 per cent of the domestic airmail postage business, 10.6 per cent of the foreign airmail business, and 10 per cent of postage revenue of all types during the fiscal year 1946-47.

Wheat Storage Problem

Storage space for the Pacific Northwest wheat crop presents some difficulties. The surplus will be approximately 100,000,000 bushels, it is estimated by Ed J. Bell, administrator of the Oregon State Wheat Commission. He says the Commodity Credit Corporation will have to export about 7,000,000 bushels monthly to clear space in elevators and warehouses for next year's harvest.

THE NEW *Air Rights Series*

ELWELL-PARKER FORK TRUCK



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Strom BALLS Serve Industry

Largest Independent and Exclusive Metal Ball Manufacturer

Horn Products Plant Opens in Los Angeles

The new West Coast manufacturing unit of A. C. Horn Company Division of Sun Chemical Corporation is now in full operation at 7237 E. Gage Ave., Los Angeles. The A. C. Horn Company was founded in 1897 as a small paint manufacturing plant in New York City. It now manufactures a wide variety of materials for building maintenance and construction.

Plant construction was supervised and placed in operation by Jack Sinclair. Associated with him was Francis Hawlish, who is in charge of production. The plant has a rated capacity of 4,000 gallons of material a day.

Fred Sumner is general manager of Pacific Coast activities for the A. C. Horn Division. Stanford Horn is manager of sales for the Pacific Coast. Sid Blum is in charge of the Los Angeles office. Other coast offices are maintained in San Francisco and Seattle.

Committee Cracked

Pacific Coast Petroleum Industries Committee has been merged into the Western Oil and Gas Association in the interests of eliminating duplications in overhead and effecting a better coordination of the industry's activities with respect to highway finances, gasoline taxes, municipal ordinances and related matters. A new committee will be created in the association setup.

Let READY-POWER

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Ready-Power-Equipped Baker Fork Trucks Loading Semi-Trailers

Heavy loads and long hours can't stump Ready-Power gas-electric Power Units. They are designed to "take it" and built to last. They're better than good enough to handle the toughest jobs hour after hour, day after day with constant power generated right on the truck. Specify Ready-Power for your next electric truck or write for information about converting present equipment.

Visit the Ready-Power Display at Booth 435, 3rd National Materials Handling Exposition, January 10 to 14, Convention Hall, Philadelphia, Pa.

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Pressures: 300 lbs. to 2500 lbs.

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Coast Conference Set On Aircraft Inspection

Scheduled to participate in the West Coast Conference on Aircraft inspection at Los Angeles Dec. 9 and 10 are W. E. Thomas, Magnaflux Corp.; Paul Kuntz, Air Force Material Command; William Hitt, assistant chief inspector, Douglas Aircraft; J. W. Sweet, chief metallurgist, Boeing Aircraft Co.; Melfred J. Parker, chief inspector, Axelson Mfg. Co.; Mrs. R. H. Smith, chief metallurgist, Turbodyne Corp.; John Welty, metallurgist, Solar Aircraft Co.; William Bonnell, research engineer, Lockheed Aircraft Corp.; W. W. Wilcox, inspection manager, United Air Lines; and C. E. Betz, Magnaflux Corporation. A visit to the Magnaflux laboratory is scheduled.

Election Voided

NLRB has voided a representation election at Klamath Lake Moulding Company because at the time of voting the NLRB agent used union shop authorization ballots rather than the correct certification ballots. In the election a majority of the employees voted no-union; the AFL union then questioned the conduct of the election. This nullification action came six months after the date of the election. The company was not informed of the error, objection, or investigation; its first information came with the order setting aside the results of the election.

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STEEL BELT LACING

World famed in general service for strength and long life. A flexible steel-hinged joint, smooth on both sides. 12 sizes. Made in steel, "Monel Metal" and non-magnetic alloys. Long lengths supplied if needed. Bulletin A-60 gives complete details.

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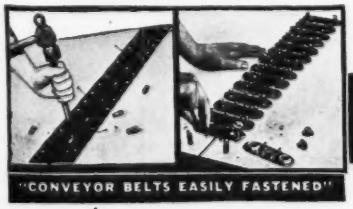
For conveyor and elevator belts of all thicknesses, makes a tight butt joint of great strength and durability. Compresses belt ends between toothed cupped plates. Templates and FLEXCO Clips speed application. 6 sizes. Made in steel, "Monel Metal", non-magnetic and abrasion resisting alloys.

By using Flexco HD Rip Plates, damaged conveyor belting can be returned to satisfactory service. The extra length gives a long grip on edges of rip or patch. Flexco Tools and Rip Plate Tool are used. For complete information ask for Bulletin F-100.

Sold by supply houses everywhere



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New Laws Needed For Cold Storage

A serious need exists for new state laws governing the storage of perishables to bring them into conformity with modern methods of handling and storage, state and federal officials were told at a meeting in Portland, September 27.

The speaker was Edgar N. Burns, vice-president of Terminal Ice & Cold Storage Company, who is president of the National Association of Refrigerated Warehouses. He addressed a meeting of the National Association of Commissioners, Secretaries and Directors of Agriculture and the National Association of Marketing Officials.

Points he made included the following:

Many states limit the storage period on certain commodities to one year when it is now a simple matter to hold these commodities under conditions which will preserve their freshness and flavor for much greater periods. Other laws require the stamping of "Cold Storage Product" in large letters on commodities held under refrigeration. This labeling tends to brand the product as inferior which is definitely not the case.

In making inspections of commodities in storage, state authorities to employ only those inspectors who are thoroughly familiar with foodstuffs. Warehousemen should not be required to make excessive inspections or to make inspections requiring the tearing down of piles in storage and similar work for which they are not compensated.

There is a wonderful opportunity for agricultural agencies to do a much needed job in educating producers in the preservation of food prior to marketing. If the estimated 25 per cent spoilage in fresh fruits and vegetables before reaching the consumer could be eliminated it would make a substantial addition to the nation's food supply.

In issuing grading certificates, the USDA should facilitate this operation so as to reduce the delay between the actual taking of samples and the issuance of the certificates. This would eliminate many inconveniences to both storer and warehouseman.

Circus Theme Used In Richfield Film

Richfield Oil Corporation's new 20-minute motion picture, "Three-Ring Profits," which has been shown to some 3,500 dealers in a series of fall meetings which began November 1, uses the circus theme because of the traditional leadership of the circus in showmanship.

The film points out that showmanship "sells the circus" and declares "showmanship is salesmanship and salesmanship is showmanship." The presentation is being made throughout Richfield's Western states marketing area.

Paint Industry Plans L. A. College Course

Los Angeles City College is establishing a course in decorative and protective coatings in co-operation with the Los Angeles Paint, Varnish & Lacquer Association. It is hoped to have the course started in January. Details are not concluded as yet but it is expected that the course will cover academic subjects and paint formulation, enamels and varnishes, synthetics and lacquers, color and decoration and technical problems pertinent to the paint industry.

Percy Keith is president of the association. Raymond T. Carey, Interchemical Corporation, Los Angeles, is chairman of the educational committee working with the college. Others on the committee are Leon S. Finch, Leon Finch, Ltd.; Clyde Smith, Lewis Paint Products Co.; Ray Swenson, Pittsburgh Plate Glass Co.; H. C. McClellan, Old Colony Paint & Chemical Co.; W. W. Cadwallader, A. J. Lynch Co., and Watson Hillis, Braun Corporation.

Profit-Sharing

Alexander Film Company, Colorado Springs, Colo., producer and distributor of short-length motion picture advertising, has paid a $46,000 profit-sharing bonus to all of its salaried members in the home office and other sales offices in key cities throughout the country. The bonus was distributed on the basis of length of service, individual merit and base pay rate.

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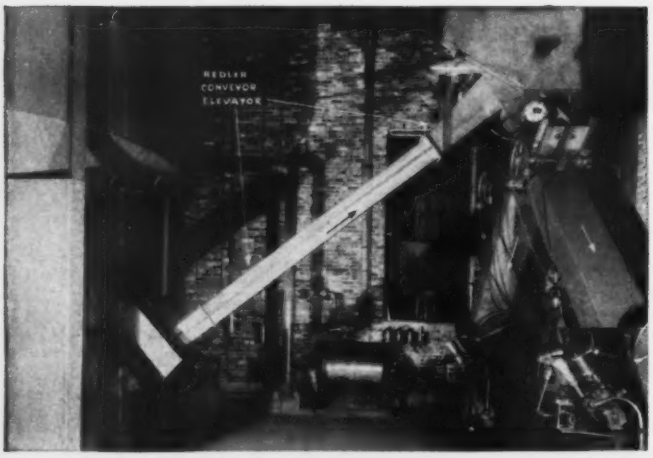

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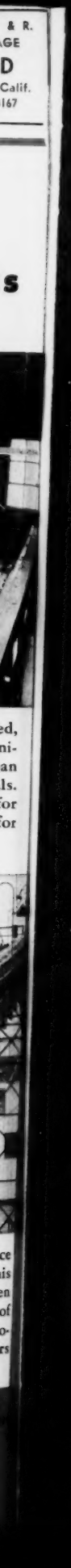
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